Government of Saskatchewan

Annual Report 1998-99

Saskatchewan Energy and Mines

100-03966/

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Letter of Transmittal from the Minister

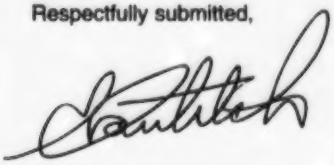
To His Honour J.E.N. Wiebe

Lieutenant Governor of the Province of Saskatchewan

Dear Sir:

I have the honour to submit herewith the Annual Report of Saskatchewan Energy and Mines for the fiscal year ending March 31, 1999.

Respectfully submitted,



Eldon Lautermilch

Minister of Energy and Mines

Province of Saskatchewan

Message from the Deputy Minister

To the Honourable Eldon Lautermilch

Minister of Energy and Mines

Dear Sir:

I have the honour to submit the Annual Report of Saskatchewan Energy and Mines for the fiscal year ending March 31, 1999.

Several important initiatives were undertaken in 1998-99 to further the responsible development of our non-renewable resources, to create jobs, increase economic activity and to raise revenues to fund government programs and services.

The highlights include:

- The establishment of the Petroleum Technology Research Centre (PTRC) to develop the new technology necessary to help recover more of Saskatchewan's oil and gas and to do so in a progressively more energy efficient way. Together with the federal government, the University of Regina and the Saskatchewan Research Council, we created the PTRC as a vehicle to facilitate a partnership of the universities, the private sector, and the provincial and the federal government to develop the next generation of enhanced production technologies for Saskatchewan petroleum reserves.
- The successful implementation of deeper rights reversion to encourage and facilitate exploration and development of oil and gas resources below current producing zones. Approximately 22 per cent of the $48.7 million of land sale revenues realized during the fiscal year was attributed to the sale of deeper rights to companies interested in drilling targets at deeper levels. The success of some companies has helped to expand the boundaries of our traditional oil and gas producing areas and has generated considerable interest and excitement in possible new discoveries.
- A new gold and base metal royalty system was developed to encourage further development of our extensive geological potential in northern Saskatchewan.
- The first sale of disposed mineral rights under Treaty Land Entitlement occurred after extensive work by the department, the Red Pheasant Band, and the oil company in developing the policies, procedures and legal documents necessary to complete the sale. This sale demonstrates the interest and support of some entitlement bands in resource development on new reserve lands.

Beyond these specific initiatives, there were major developments in specific resource sectors.

The value of potash sales exceeded $1.6 billion, the fifth consecutive year that sale values exceeded $1 billion. Significant sales were recorded to China and Brazil, two of the largest offshore markets, while sales increased to several Pacific Rim and Latin America countries. Since potash is the largest mineral industry in Saskatchewan, this continued high level of activity is beneficial to the provincial economy.

Underground exploration and development expenditures for uranium reached more than $250 million, primarily at the Cigar Lake, McClean Lake and McArthur River mine sites. However, overall exploration expenditures in northern Saskatchewan declined due largely to the impact of low commodity prices on companies' cash flow and their capital plans. The department is continuing to review its mineral exploration and development programs, policies and geological services with the objective of encouraging more mineral exploration and development activity in northern Saskatchewan.

The year in review was a difficult one for the oil industry due to the more than 30 per cent decline in the average price for oil compared to 1997. The dramatic price collapse resulted in reduced investment in exploration and development, especially in heavy oil areas. While drilling activity for oil declined, Saskatchewan experienced a strong surge in natural gas drilling during the same period as companies shifted their exploration and development efforts from oil to gas. The upswing in natural gas drilling also reflected important changes underway in western Canadian gas markets with imminent construction of increased pipeline capacity to major U.S. markets.

Overall, the department collected $622.2 million in non-renewable resource revenue and $9.2 million in other revenues. The total value of mineral and energy sales reached $4677.6 million. The non-renewable resource sector also provided 18,000 jobs in the mining industry and another 19,000 in the oil and gas industry.

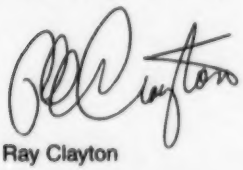
The department continues to be heavily involved in the development of a national climate change strategy in response to the commitment of the federal government to the Kyoto Protocol, particularly in identifying the options for reducing greenhouse gas emissions from 1990 levels and analyzing the implications of those options.

In regard to administrative matters, the department relocated its head office in Regina after more than twenty-five years in the same location. The move will result in significant financial savings over the ten-year term of the lease. Considerable staff time and effort was required to deal with the government-wide scope review and the introduction of the new in-scope class plan.

Finally, the outstanding efforts and dedication of employees within energy and mines are a hallmark of the department. Their professionalism and commitment are the reason why we have been able to maintain the excellent service to the non-renewable resource industries and to the people of Saskatchewan.

Looking ahead to 1999-2000, the department expects to complete its Y2K computer system compliance project by mid-year. We will continue to work on developing and analyzing issues regarding a national climate change strategy for consideration by Environment and Energy Ministers late in 1999. We also plan to consult with the provincial stakeholders group for advice on what approach and specific measures Saskatchewan should take. We plan to continue our reviews of non-renewable resource fiscal systems to ensure that they meet provincial and industry needs in light of changing circumstances and to review our geoscience programs, policies and services with the objective of encouraging more exploration and development activity.

Respectfully submitted,



Ray Clayton

Deputy Minister of Energy and Mines

Province of Saskatchewan

June 1999

Department Mission and Legislation

1. Mission

The mission of Saskatchewan Energy and Mines is to achieve full and responsible development of Saskatchewan's energy and mineral resources to create jobs and sustain economic activity in Saskatchewan, and to optimize revenues to fund government programs and services.

2. Legislation

The legislated mandate of the department is set out in the following acts:

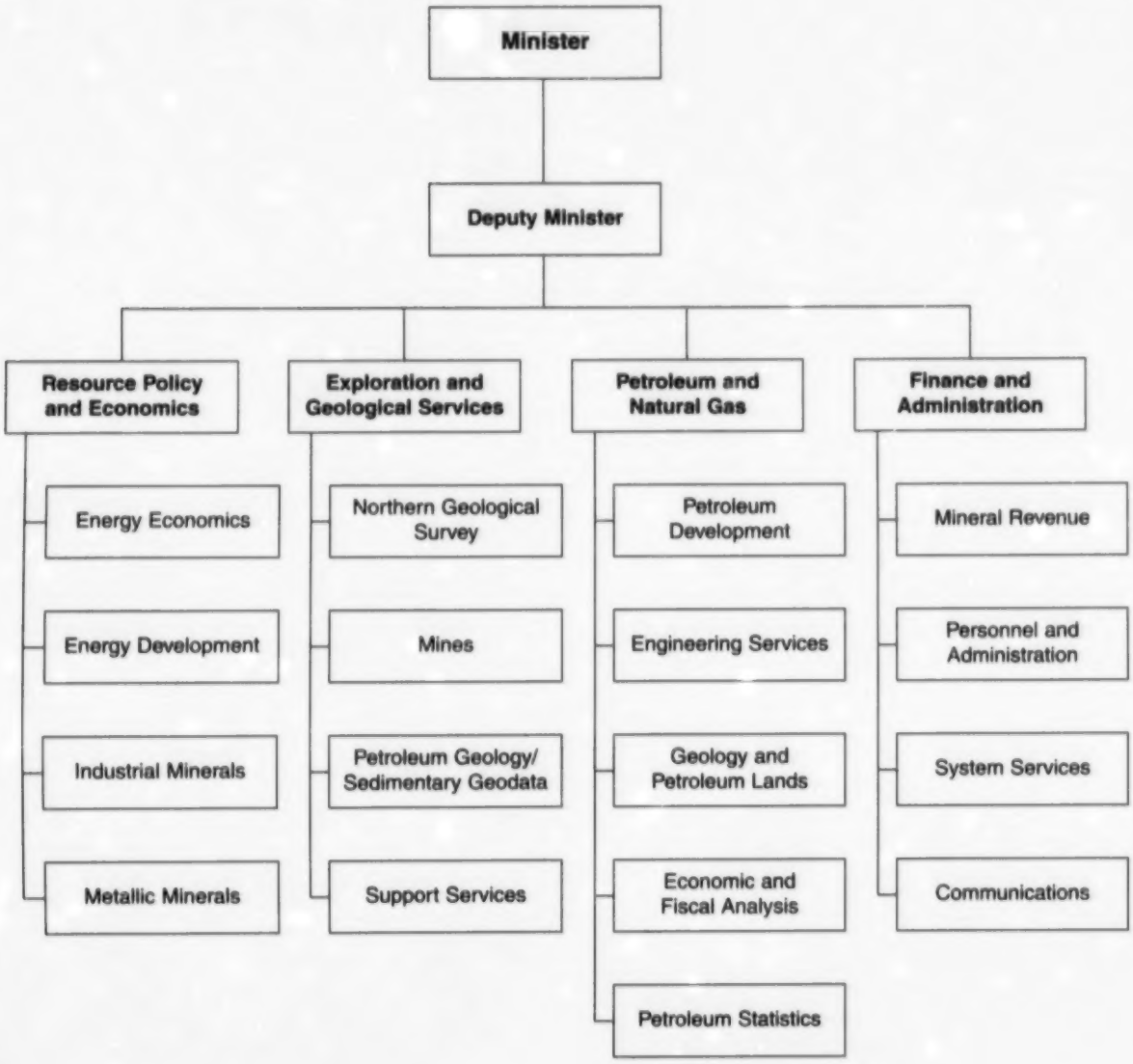
- *The Department of Energy and Mines Act* which provides the Minister with the responsibility for the exploration, development, management, and conservation of non-renewable resources and the development, management, and conservation of energy.
- *The Oil and Gas Conservation Act* which allows the orderly exploration for, and development of, oil and gas in the province and optimization of recovery of these resources.
- *The Crown Minerals Act* which allows for the leasing of Crown mineral rights and provides authority to collect royalties on Crown dispositions.
- *The Freehold Oil and Gas Production Tax Act* which provides the authority to tax freehold oil and gas in the province.
- *The Mineral Taxation Act, 1983* which provides authority to tax mineral production and mineral rights.
- *The Mineral Resources Act, 1985* which provides for the orderly exploration, development, conservation, management, and primary production of mineral resources in Saskatchewan.
- *The Pipe Lines Act* which allows for the regulation of the conditions under which oil and gas may be transported by pipeline.

Department Objectives and Programs

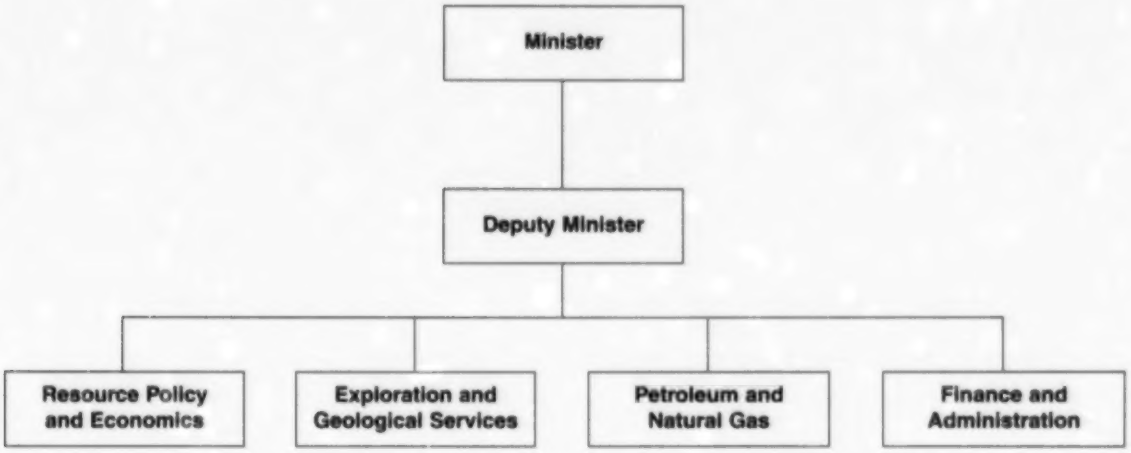
The main objectives of Saskatchewan Energy and Mines and the programs in place to achieve those objectives are:

- To promote development of Saskatchewan's energy and mineral resources by:
  - reviewing and developing policies and providing information and recommendations to government related to incentives, markets, investment, taxation, pricing, rate of development, research and development, and environmental issues that affect the energy and mineral sectors;
  - providing long-term forecasts of production, sales, price, royalty revenue, employment, and investment;
  - collecting, evaluating, maintaining, and providing to industry exploration, development, production, and disposition data;
  - conducting research into the geology and mineral deposits of the province, and maintaining a geoscience database;
  - evaluating and monitoring oil and gas reservoirs for resource assessment and project approval purposes; and
  - providing geological services and public information.
- To encourage sustainable development and utilization of energy resources by:
  - promoting the efficient use of energy by Saskatchewan consumers;
  - investigating the environmental impact of energy utilization; and
  - encouraging enhanced production or value-added processing of energy resources through technical innovation.
- To secure a fair share of revenues from Saskatchewan's energy and mineral resources by:
  - designing and managing appropriate royalty and tax fiscal systems;
  - establishing and implementing appropriate rental rates, fees, and mineral rights tax rates;
  - administering regular land sales;
  - implementing and managing a revenue collection system; and
  - auditing royalty and tax returns and monitoring data used for revenue calculations.
- To ensure maximum resource recovery and environmentally responsible resource development by:
  - establishing and enforcing environmental and safety standards for oil and gas fields;
  - establishing, monitoring, and enforcing oil and gas conservation standards and regulations;
  - issuing geophysical and well licences for oil and gas; and
  - encouraging potash market research and development, and research into new petroleum technologies.
- To ensure that the development of Crown minerals maximizes economic benefits to the province by:
  - providing Crown mineral rights for disposition; and
  - administering Crown mineral rights dispositions.

Department Organization Chart



Department Organization Chart by Function



- Policy Development
- Energy Management
- Coal, Industrial, and Metallic Minerals Fiscal Systems

- Geoscience Programs
- Resource Assessment and Statistics
- Crown Mineral Rights
- Technical Reports and Map Production

- Oil and Gas Fiscal Systems
- Oil and Gas Royalty and Tax Reporting
- Oil and Gas Environmental and Safety Standards
- Oil and Gas Conservation
- Geophysical and Well Licences
- Crown Oil and Gas Rights
- Oil and Gas Production and Disposition Data
- Oil and Gas Reservoirs
- Oil Forecasting

- Communications and Publications
- Treaty Land Entitlement
- Mineral Rights Ownership Records
- Revenue Collection
- Information Technology
- Personnel Services
- Administration and Financial Services

Resource Policy and Economics Division

1. Overview of Division

The mandate of the division is to identify, undertake research and analysis, and provide information and policy recommendations to government on emerging issues related to mineral and energy development. The division is responsible for designing and maintaining royalty and tax revenue programs for coal and industrial and metallic mineral resources. The division also serves as the department's liaison with the federal and other provincial governments on issues of mutual concern in the mineral and energy sectors, and is responsible for negotiating agreements with other jurisdictions that may be required with respect to these issues.

The division has four branches: Energy Economics Branch, Energy Development Branch, Industrial Minerals Branch, and Metallic Minerals Branch.

2. Resource Development Program

Policy development includes monitoring and analysing market trends, industry performance, and regulatory initiatives in other jurisdictions, and providing information and policy recommendations on issues that impact the energy and mineral sectors. Reports and recommendations are provided to the Minister and the government with respect to market conditions, pricing trends, industry investment, research and development, and socioeconomic and environmental implications of industry activity.

Industry, provincial departments and Crown agencies, other governments, and stakeholders, as appropriate, are consulted on recommendations related to resource policy and development issues.

The mandate for this program comes from:

- *The Mineral Resources Act, 1985* which provides authority with respect to the exploration,development, management, and conservation of mineral resources;
- *The Oil and Gas Conservation Act* which provides the authority to implement natural gas policy; and
- *The Department of Energy and Mines Act* which provides authority with respect to the development, management, and conservation of energy.

Major Activities and Results:

- Monthly reports on natural gas, potash and uranium were prepared on market events, pricing changes, industry activities, and related regulatory and policy developments in other jurisdictions.
- Short- and long-term economic forecasts of production, sales, price, revenue, employment, and investment were prepared for coal, natural gas, potash, uranium, and sodium sulphate. These forecasts assisted the government in budget planning, economic forecasting and planning, and negotiating federal-provincial equalization.
- Division staff continued to work with Saskatchewan Environment and Resource Management on mine reclamation and decommissioning issues including the establishment of financial assurances.
- Division staff reviewed the potash market development and potash research and development programs to ensure the programs continued to meet their intended objectives. The programs focus on expanding markets in southeast Asia, particularly China, and on environmental concerns, such as waste management.
- Division staff participated on an interdepartmental committee to reduce the overlap and duplication between federal and provincial regulation of uranium mines in the province.
- Division staff participated, through membership in the Northern Mines Monitoring Secretariat, in providing support to the activities of the Environmental Quality Committees in monitoring uranium mine operations in northern Saskatchewan.
- Division staff undertook a review of the royalty system for gold and base metals in 1998-99. Proposed changes to the royalty system to promote development of Saskatchewan's gold and base metal potential were announced in the 1999-2000 budget.
- Division staff participated in the development of Saskatchewan's State of the Environment Report 1999 on the Boreal Shield Ecozone.
- Division staff participated in the review and evaluation of interdepartmental and intergovernmental initiatives including:
  - the reclamation and decomissioning of abandoned uranium mine sites; and
  - Guidelines for Naturally Occuring Radioactive Materials.
- Division staff represented the government on the Intergovernmental Working Group on the Mineral Industry and served as co-chair of the Subcommittee on Aboriginal Participation in Mining. In 1998-99, the subcommittee prepared the "Ninth Annual Report on Aboriginal Participation in Mining".

- Division staff resolved issues related to the development of the amendments to *The Potash Production Tax Regulations* and *The Mineral Taxation Act, 1983* to implement the changes to the potash tax system announced in February, 1998.
- During the fiscal year, the department authorized short-term interruptible gas removal and sales permits for four producers, and amended eight short-term interruptible gas removal and sales permits and two short-term interruptible gas use permits.
- Division staff represented Saskatchewan's interests in energy sector discussions in the negotiations between Canada and the provinces for an agreement to reduce internal trade barriers within Canada.
- Division staff co-ordinated the development of the process to resolve issues surrounding the drilling of oil and gas wells near potash mines in the province.
- Division staff participated in the joint federal/provincial study on the report of the technical Committee on Business Taxation, chaired by Jack M. Mintz

Resources:

The total cost of the resource development activity was $444,000 and involved half the time of 14 staff of the division.

Contact:

For further information, contact Dan McFadyen, Assistant Deputy Minister, Resource Policy and Economics, at 787-2523.

3. Energy Management Program

The energy program involves the development of policies and programs to encourage the responsible development and utilization of energy resources in Saskatchewan. Policies and programs are developed to promote the efficient use of energy by Saskatchewan consumers, to improve the competitiveness of businesses through improved energy management practices, and to investigate the environmental impact of energy utilization. Policies and programs are also developed to encourage enhanced energy resource production through technological innovation.

Developments in other jurisdictions that have the potential to affect the production, marketability, or use of our energy resources are monitored. The division represents the government in a number of intergovernmental initiatives examining issues related to responsible development of our energy resources.

The mandate for this program comes from:

- *The Department of Energy and Mines Act* which describes the Minister's authority and responsibility with respect to energy management and provides authority to enter into agreements with other governments; and
- *The Mineral Resources Act, 1985* which provides authority for conservation of mineral resources.

Major Activities and Results:

- Division staff were instrumental in the successful establishment of the Petroleum Technology Research Centre (PTRC) at the University of Regina. The PTRC is a new petroleum research group that brings together the expertise of the Saskatchewan Research Council and the University of Regina.
- Division staff were involved in a number of other initiatives related to greenhouse gas emissions and global climate change including:
  - participating in the National Air Issues Co-ordinating Committee (NAICC) and several of its subcommittees and working groups. The NAICC is responsible for implementing Canada's National Action Plan on Climate Change for developing a Canadian response to the Kyoto Protocol;
  - participating in the International Energy Agency's greenhouse gas program;
  - representing Saskatchewan in the greenhouse gas emissions reduction trading (GERT) pilot project. The pilot encourages voluntary investment in emission reduction projects and the trading of emissions reductions to lay the groundwork for a possible future emissions reduction trading system.
  - maintaining a toll-free energy conservation telephone line to provide energy conservation information to Saskatchewan consumers. Approximately 280 information requests were handled and two referrals were made to the Saskatchewan Research Council for more detailed advice;
  - updating the Saskatchewan Climate Change Action Plan which includes a number of initiatives; and
  - updating provincial activities in support of the National Voluntary Challenge and Registry.
- In co-operation with Natural Resources Canada, the following activities were undertaken:
  - the EnerGuide for House Program in Saskatchewan in co-operation with Sun Ridge Group;
  - the R2000 Home Certification Program in Saskatchewan, in co-operation with the Saskatchewan Home Builders Association;
  - the Canadian Agricultural Energy End Use Data and Analysis Centre at the University of Saskatchewan; and
  - sharing of information on energy efficiency and conservation.

- Division staff undertook various initiatives to encourage energy resource production through technological innovation:
  - Several applications were received in response to the Saskatchewan Petroleum Research Incentive announced in March 1998. This initiative will run for up to another four years and will provide up to $17.5 million of royalty/tax incentives to encourage industry to develop new technology for the oil and gas sector. The application of new technologies in the oil and gas sector will generate significant economic benefits for the province.
  - In co-operation with the North Dakota Geological Survey, division staff organized and hosted the seventh annual Williston Basin Horizontal Well Workshop in Regina in April to promote opportunities for oil field development with horizontal wells. Over 300 oil industry participants attended.

Resources:

The total cost of the program was $728,700 and involved seven staff on a full-time basis and half the time of eight staff.

Contact:

For further information, contact Malcolm Wilson, Director, Energy Development Branch, at 787-2618 or Trevor Dark, Director, Energy Economics Branch, at 787-2469.

4. Resource Revenue Program

The coal, industrial, and metallic minerals fiscal systems program includes the monitoring and managing of royalty and tax systems for these resources. The objective of the royalty and tax systems is to ensure a fair economic return to the province from resource development, while maintaining a healthy investment climate to encourage industry to explore and develop the province's resources.

The royalty and tax systems are reviewed in response to changes in markets, prices, production and capital costs, and regulations and policy in other jurisdictions. Analysis and recommendations on changes to royalty systems, in response to these conditions, are provided to the government for consideration. Consultation with industry is a key consideration in developing changes to royalty and tax systems.

Administration of these royalty and tax systems include:

- reviewing sales contracts to ensure fair market value is received for Saskatchewan uranium and natural gas;
- reviewing and approving industry expenditures eligible for tax incentives to encourage potash research and development and market development; and
- preparing revenue and economic forecasts.

The mandate for the program comes from:

- *The Mineral Taxation Act, 1983* which provides the authority to tax freehold minerals in the province; and
- *The Crown Minerals Act* which provides the authority to collect royalties on Crown minerals in the province.

Major Activities and Results:

- This program collected over $217 million during the fiscal year.
- Numerous issues arising from the administration of the royalty and tax systems were identified, reviewed, and resolved.
- Industry proposals under the potash market development and research and development programs were reviewed and approved.
- Division staff nearly completed the amendments to *The Potash Tax Regulations* and *The Mineral Taxation Act, 1983* to implement the changes amended in February, 1998.
- Division staff resolved a number of issues related to potash lease and unit expansions.
- The analysis of the implications of the ownership and processing arrangements of the proposed new uranium mining operations on the uranium royalty system continued.
- Work continued on the review of the uranium royalty system to incorporate the costs associated with financial assurances related to mine site decommissioning and reclamation.
- Division staff prepared amendments to *The Alkali Mining Regulations* pertaining to the changes to the sodium sulphate royalty system.
- Division staff developed draft government guidelines for establishing new potash unit agreements.

Resources:

The total cost of the resource revenue program was $440,000 and involved half the time of 14 division staff.

Contact:

For further information, contact Maurice Hall, Director, Industrial Minerals Branch, at 787-2521 or Dan McFadyen, Assistant Deputy Minister, Resource Policy and Economics at 787-2523.

Exploration and Geological Services Division

1. Overview of Division

The division's objective is to promote mineral (including petroleum) exploration and development by conducting geological mapping and evaluation projects, maintaining a geoscience database, and administering the disposition of metallic and industrial mineral rights on Crown lands.

The division is responsible for the disposition of Crown mineral rights for all minerals except petroleum, natural gas, helium, and oil shale. The division continued its review of *The Mineral Disposition Regulations, 1986. The Sedimentary Basin Geophysical Exploration Regulations, 1985*, governing seismic programs, *The Alkali Mining Regulations, 1943* and *The Quarrying Regulations, 1957* were also reviewed. The division supports a number of policy initiatives related to exploration, land use planning, park proposals, and project reviews. The division is responsible for the collection of statistical data relating to mineral exploration, production, and sales.

Resources:

The division has a staff of 60.5, which includes 24 geologists. Expenditures in 1998-99 included salaries of $2.76 million, of which summer student employment accounted for $153,000, and other expenditures of $535,000. Of these totals, division administration costs were salary costs of $126,000 and operational costs of $101,000.

2. Geoscience Program

The Geoscience Program has four geoscience components: Northern Geoscience (Precambrian bedrock mapping and metallic mineral deposit studies); Southern Geoscience (diamond, other industrial minerals, and geophysical studies); Database Development (development of digital map production and maintenance and upgrading of data files), and Mineral Resource Assessment (evaluation of the mineral resource potential of Crown lands).

Resources:

Salary costs for two full-time staff were $115,000.

Contact:

For further information contact Dr. Gary Delaney, Director Northern Geological Survey Branch at 787-1160

a) Northern Geoscience

The Northern Geoscience Program, implemented by the Northern Geological Survey Branch, provides information through field projects including regional geological mapping, and site-specific studies of mineral deposits. These investigations assist the mineral industry in the search for new mines in northern Saskatchewan. They are also required in land use planning to ensure that high mineral potential lands remain available for exploration while facilitating the establishment of representative areas and parks. Where possible, activities are integrated with national geoscience programs (i.e. the Geological Survey of Canada's (GSC) National Mapping Program (NATMAP), and the LITHOPROBE Canada-wide crustal seismic study under the National Science Foundation). Northern Geological Survey Branch field projects were enhanced by two Ph.D. and three B.Sc. thesis studies contributing an estimated $160,000 of added value.

Major Activities:

- Wollaston Base Metals Project
- Wollaston Transect Project
- Reconnaissance Geology of the Rae Province Northeast of Lake Athabasca
- Geological Investigations of the Murmac Bay Group, Lake Athabasca North Shore Transect
- La Ronge–Lynn Lake Bridge Project: Birch Point Area, Reindeer Lake
- La Ronge–Lynn Lake Bridge Project: Street Lake Area
- La Ronge–Lynn Lake Bridge Project: Metallogenic Studies
- Gold Mineralization Studies, Byers Fault Area, La Ronge Domain
- Geochronology

Impacts:

- The Wollaston Base Metals project has generated criteria to focus exploration for copper and lead-zinc in the Wollaston Domain.
- The Wollaston Transect project, which includes a Ph.D. study partially funded by an industry consortium, is helping to clarify stratigraphic, structural, and metamorphic relationships in the Wollaston Domain. This work will have important implications in future uranium projects.
- Investigations of the Rae Province, to the northeast of Lake Athabasca, are providing fundamental information about geological relationships in a poorly understood area. This work will not only help evaluate the mineral potential, but also provide critical background information in evaluating a large Representative Areas Network (RAN) site proposal.

- The study of the Murmac Bay Group is providing important insight into the extent, age, stratigraphy, tectonic history, and mineral potential of a sequence of rocks known to host numerous gold, nickel, copper, and uranium showings.
- The major La Ronge–Lynn Lake Bridge project, a multi-year co-operative project in conjunction with the GSC, is providing important insight into an area that joins mineral producing areas in Saskatchewan and Manitoba.
- The investigation of gold mineralization in the Byers Fault area has distinguished two different ages and styles of gold mineralization. This work should help to focus current exploration activities in an area that contains several significant gold occurrences including one past-producing mine.

Resources:

Salary costs for four full-time project geologists, two half-time project geologists, and one other staff person were $347,000. Summer student costs were $133,000 and operational costs were $237,000.

b) Southern Geoscience

Major Activities:

- Sodium Sulphate
- Industrial Mineral Sampling
- Subphanerozoic Precambrian
- Canadian Institute of Mining and Metallurgy (CIMM) Volume

Impacts:

- Two companies acquired land containing known kaolin resources. Their acquisitions were facilitated, in part, by drawing on the knowledge base and data retained by the Saskatchewan Geological Survey.
- Preliminary results from an investigation into the origin of the province's sodium sulphate deposits have been released to industry. An ongoing, expanded project includes participants from the Saskatchewan Geological Survey, the University of Saskatchewan, and all of the province's producers of sodium sulphate and potassium sulphate. The expanded project will be partially funded by The Strategic Initiatives Fund, administered by Saskatchewan Economic and Co-operative Development.
- Representatives of the Saskatchewan Geological Survey and the diamond exploration and potassium sulphate production industries presented papers at the CIMM conference on Industrial Minerals in Canada. The proceedings volume contains papers comprising a thorough overview of Saskatchewan's industrial minerals production and opportunities. It will be distributed world-wide, exposing the province's mineral resources to a vast audience.

Resources:

Salary costs for one project geologist were $57,000, summer student costs were $7,000, and other expenses totalled $20,000.

c) Database Development

Database development continued to focus on maintaining and updating existing data files, converting data files into geographic information system (GIS) compatible formats, and on the use of digital technology for map production.

Major Activities and Results:

- Digitization of mineral assessment work areas from industry submissions was maintained using the IRMIS GIS. Digital map overlays are available for the entire province.
- The use of digital technology for integrated geological map production was continued. Summary of Investigations maps included in the 1994-1998 map packages are available in both printed and digital (DWG/DXF) format. The digitally compiled 1:1,000,000 scale Geological Map of Saskatchewan is available in preliminary in-house plotted format and will be available in final print-on-demand format in early 1999-2000. A new Mineral Resource Map of Saskatchewan was compiled using GIS technology and is available to the public.
- Several in-house and external data files were converted to GIS compatible format and tested by linking to the digital Geological Map of Saskatchewan.
- The Geological Map of Saskatchewan CD-ROM, which is available with included viewing/query software, contains several geoscience data files linked to the Geological Map of Saskatchewan in GIS format. Updated and new data files will be added to the CD-ROM for annual release.
- Data files were provided to the National Geological Surveys Committee for inclusion in the Canadian Geoscience Publications Directory, an Internet-based network of geoscience information sources.
- Conversion of mineral disposition maps and data files into digital GIS compatible format continued. The goal is to provide digital mineral disposition map and data file information for the entire province.

Impacts:

- The introduction of digital technology will allow quick and global access to the department's geoscience database.
- Completion of mineral potential assessments has allowed for identification of areas of higher mineral potential as part of the land use planning process. This is of extreme importance to ensure that restricted land use candidate areas do not conflict unnecessarily with resource-rich regions.

Resources:

Salary costs for a project geologist and GIS technician were $94,000 and other costs were $10,000.

d) Mineral Resource Assessment Program

A mineral resource assessment program was initiated in 1996 in response to land use planning requirements in the province. The assessments are conducted with a structured qualitative methodology that employs defined criteria. The methodology has been evaluated and approved by the mineral and petroleum industries.

A Memorandum of Understanding (MOU) with Saskatchewan Environment and Resource Management (SERM) formalized the use of mineral resource assessments and industry review of land use proposals within the planning process.

A number of 1:250,000 scale assessments were carried out in 1998-99 in response to RAN site proposals and to regional land use plans that are being developed in many areas of the province.

Results:

Discussions on potential RAN sites with SERM and industry have been completed in a number of areas. The large Seager Wheeler and Wapawekka Hills sites were announced this past February. Discussions have been completed on the Lobstick Narrows site. All three of these sites occur in the east-central part of the province. Discussions are almost complete on four proposed sites in the southern Amisk-Atik land use plan area, Wildlife Development Fund lands in the Quill Lakes area, and three proposed sites in the Doré-Smoothstone lakes area. Discussions continue on a number of large site proposals in the northern part of the province. The use of the mineral resource assessments, the MOU, and active industry involvement in the process, has reduced industry concerns regarding RAN site selections.

Resources:

The unit is staffed by one project geologist and one GIS technician at a salary of $81,000. Other costs were $5,000.

3. Sedimentary Geology Studies

The Sedimentary Geology Section of the Petroleum Geology Branch extracts geological information submitted for newly drilled wells under *The Oil and Gas Conservation Regulations, 1985* and adds the information into the department's computerized Well Information System (WIS). The data are used to improve our knowledge of Saskatchewan's geology and to promote areas and geological formations likely to contain economic accumulations of petroleum.

Major Activities and Results:

- Stratigraphic information was processed from 2,523 wells and added to the WIS. New wells drilled numbered 1,530. The backlog of wells to process stands at 4,266.
- The stratigraphy of several hundred older wells was reviewed and entered into the Well Information System (WIS).
- Three regional studies were continued: the Geology of the Upper Colorado Sub-Group (Cretaceous) in southwestern Saskatchewan, the Geology of the Interlake Formation (Silurian) in Saskatchewan, and production of digital regional maps of Lower Paleozoic formations.
- Extensive support, including contributed papers and technical editing, was given to preparing two publications useful to petroleum industry geologists: the proceedings of an International Williston Basin Symposium and Volume 1 of the Summary of Investigations 1999.
- Contributed to production of the new Geological Map of Saskatchewan.

Resources:

The program was carried out by four full-time geologists, three part-time geologists, and one clerk at an expense of $343,000. Operating costs were $16,000.

Contact:

For further information, contact Dr. Chris Gilboy, Director, Petroleum Geology Branch, at 787-2573.

4. Resource Development Program – Resource Assessment and Statistics

a) Mineral Assessment Work

The mineral assessment program collects, audits, and catalogues technical data on mineral exploration to facilitate industry's exploration and development of the province's resources. The mineral industry submits exploration and development information as required under *The Mineral Disposition Regulations, 1986.* The technical work and financial credits claimed in the submissions are audited.

The technical information is put into the Saskatchewan Mineral Assessment File, which is an important database for mineral exploration and land use planning.

Mineral occurrence data is kept in the Saskatchewan Mineral Deposits Index and further processed into maps. The maps provide an appraisal of mineral resource potential.

The geographic area covered by each assessment work report is available either as a digital file on diskette or as blue-line maps.

Major Activities and Results:

- A total of 119 new assessment files were incorporated into the Saskatchewan Mineral Assessment File bringing the total number of records on hand to 15,368. One hundred and thirty-six visitors were received and 137 requests for information handled.
- Twenty-six records were added to the Saskatchewan Mineral Deposits Index, which raised the total records to 2,898. Seventeen requests for information were handled and there were approximately 4,656 visits to the Mineral Deposits Index on the department's Website.
- A total of 1,632 submissions were received for claimed expenditures of $29.7 million, an increase in total number of submissions, but decrease in expenditures claimed over the previous year's submissions. Although underground development submissions were received in 1998-99, they were not included in the above statistics as their large figures mask all other contributions.
- The bulk of assessment expenditures, $15.6 million, was related to uranium exploration; diamond and gold expenditures decreased to $1.2 and $2.6 million respectively; while base metal expenditures increased to $10.3 million compared to last year's assessment submissions.
- Airborne geophysics, mapping, and diamond drilling increased in number and amount, while geochemical surveys and other drilling decreased. Ground geophysics and grid establishment projects were comparable to the previous year's submissions.

Figures 1 and 2 indicate the breakdown of expenditures by specific exploration activity and exploration by region respectively.

Figure 1 – 1998-99 Assessment Credits by Activity (1997-98 figures are in brackets)

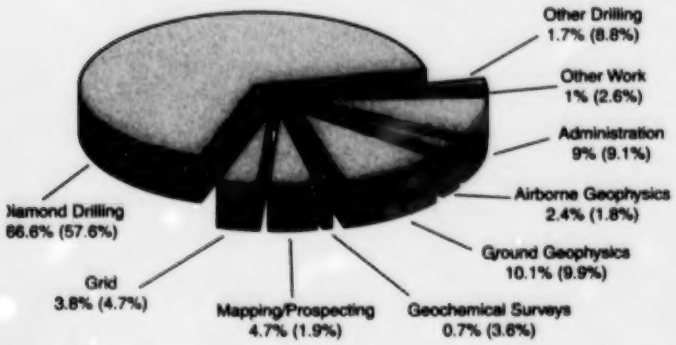
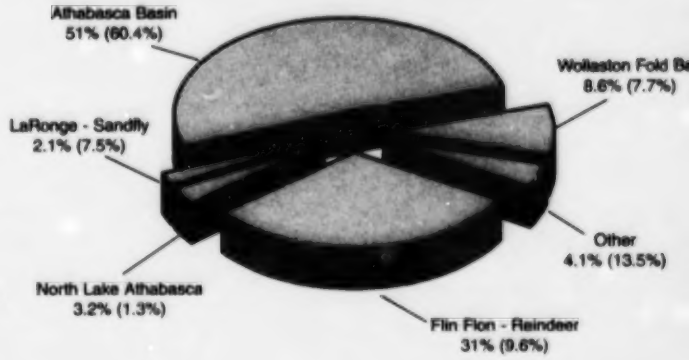


Figure 2 – 1998-99 Assessment Credits by Region (1997-98 figures are in brackets)



Resources:

The assessment work unit involves three staff and one student. Salary costs were $152,000.

Contact:

For further information, contact Dr. Gary Delaney, Director, Northern Geological Survey Branch, at 787-1160 or Pam Schwann, Director, Mines Branch, at 787-2584.

b) Sedimentary Geodata

The Sedimentary Geodata Section of the Petroleum Geology Branch maintains a central repository of well records and geophysical data acquired under *The Oil and Gas Conservation Regulations, 1985* and *The Sedimentary Basin Geophysical Exploration Regulations, 1985.* Much of the information is summarized in the computerized Well Information System (WIS).

Major Activities and Results:

Due to low oil prices, petroleum exploration slowed down dramatically for this fiscal year which resulted in an average volume of data submitted. A review of the WIS, a minor reorganization of staff duties, the hiring of a permanent file clerk, and the lower industry activity helped reduce the backlog of material requiring processing. Wells to process declined from 6,793 at the end of March 1998 to 6,385 at the end of March 1999. Amended regulations which will require companies to submit more accurate well site locations and latitude and longtitude data were passed. Consultations were completed with industry regarding amendments to seismic regulations and these should take effect by mid-1999.

- 1,546 new well files were set up;
- data for 2,200 new wells and 3,200 supplementary data items for already existing wells were coded and entered into the WIS;
- 22,500 data submissions were received and added to the system;

- 241 preliminary and 292 final geophysical plans were approved, comprising 26,000 planned and 25,300 actual line kilometres;
- approximately 1,000 computer searches were conducted for industry, government, and the general public;
- well files were accessed approximately 60,000 times to retrieve data for industry and government, 20,000 times by Geodata staff, 30,000 times by industry, and 10,000 times by other government personnel;
- geophysical files were examined 4,000 times;
- approximately 205,000 photocopy pages were made from the files for use by industry (85,000 by staff and 120,000 by industry);
- 1,000 geophysical maps were copied for industry; and
- income from sales and services amounted to $105,000.

Resources:

Salary costs for eight permanent staff and two temporary staff were $279,000 and operating expenses were $7,000.

Contact:

For further information, contact Robert Troyer, Manager, Sedimentary Geodata Section, at 787-2562.

c) Core and Sample Storage and Examination Facility (Subsurface Geological Laboratory, Regina)

The Core and Sample Warehouse Section of the Petroleum Geology Branch treats and stores cores and samples of drill cuttings submitted under *The Oil and Gas Conservation Regulations, 1985*. The cores and samples are available for examination or analysis by industry and research geologists.

Major Activities:

- Moderate to low levels of activity by the petroleum industry over the fiscal year meant a reduction in the amounts of cores and samples submitted. Use of the facility by industry geologists remained high until the last third of the year.
- In October, the Subsurface Geological Laboratory was the venue for the Eighth International Williston Basin Symposium's Core Workshop which featured seven displays of interest to the 178 explorationists in attendance.
- Industry has responded well to the recently amended regulations requiring submission of samples in a washed and labelled state. As a result, the backlog of unwashed samples was eliminated in early October and the sample-washing machinery was dismantled.
- New cores were received from 364 wells totalling 4,512 boxes of core. This brings the total number of boxes in storage to 332,226.
- New samples of drill cuttings were processed from 1,025 wells for a year's total of 101,152 vials. The total number of vials in storage now totals 2,801,100.
- Samples totalling 90,606 vials from 875 wells were shipped to Natural Resources Canada in Calgary under a long-term agreement for storage and federal analysis for which $5,600 were received.

Results:

- Geologists from 211 different organizations (oil and mining companies, consultants, universities, etc.) spent 1,928 person-days examining geological material stored in the laboratory. Cores examined on the premises came from 3,706 wells for a total of 55,341 boxes. A further 2,403 boxes from 183 wells were dispatched for outside analysis at the request of customers. Samples examined came from 317 wells for a total of 23,921 vials.
- Income from examination charges totalled $114,700.

Resources:

Five full-time and three temporary staff support the program. Staff salaries amounted to $209,000 and operational costs were $23,000.

Contact:

For further information, contact Dr. Chris Gilboy, Director, Petroleum Geology Branch, at 787-2573.

d) Mineralized Core Collection (La Ronge)

The Precambrian Geological Laboratory in La Ronge houses both the offices of the resident geologists and the mineralized core collection, a valuable database for mineral explorers and geological research workers. The collection has 16,976 metres of concentrated cores and 65,648 metres of complete cores, primarily from mineral deposits of uranium, gold, and base metals (copper, nickel, zinc, and lead) in northern Saskatchewan. These figures are lower than previously reported and reflect a detailed recalculation of the inventories. A rock sample collection from mineral prospects in the north is also kept. With the new acquisitions the core library is full and a proposal to expand the facility will be prepared.

Major Activities:

- About 2,172 metres of core from northern mineral deposits were added to the collection.
- Also, 698 metres of sedimentary cores were collected. These northern sedimentary cores are housed at the Subsurface Geological Laboratory in Regina.

Results:

Forty-three people examined cores and the rock sample collection.

Resources:

The collection was administered part-time by a student at a cost of $8,000.

Contact:

For further information, contact Dr. Andrew Gracie, Resident Geologist, at 425-4499.

e) Mine Data and Mineral Statistics

The mine data and mineral statistics program monitors mining developments, collects, processes, and analyses production and sales data, reports exploration expenditures, prepares metallic mineral (except uranium) royalty forecasts, issues mineral test hole permits, authorizes potash well abandonments, processes revisions in potash lease or unitized areas, and maintains historical records, including mine plans. It also co-ordinates the review of all environmental project submissions referred to the department and provides input into the Environmental Assessment Technical Review Panel for mining development projects and into the Federal-Provincial Committee on Mineral Statistics.

Major Activities:

- Thirty mining operations including potash, uranium, coal, gold, base metals, salt, clay (including bentonite), calcium chloride, and sodium and potassium sulphate were in active production in 1998-99. A number of changes in the uranium mining industry occurred in 1998-99. Cameco's purchase of Uranerz Exploration and Mining as of January 1, 1998, triggered changes to the dynamics of uranium mine operations in northern Saskatchewan including a proposal to extend the life of the Rabbit Lake mill by processing Cameco's portion of the Cigar Lake Mine at Rabbit Lake rather than at the JEB mill at McClean Lake, as originally proposed. Uranium production in 1998 was derived from mining operations at the Cluff Lake Mine, Rabbit Lake operation (primarily Eagle Point mine), and milling stockpiled ore at the Key Lake facility. Stripping of overburden from the SUE C pit at McClean Lake occurred this fiscal year. The JEB pit, which was mined out in 1997, is currently undergoing construction as a tailings facility for ore processed at the JEB mill. Continued underground development of the world-class ore deposits at McArthur River and Cigar Lake mines continued in 1998 in anticipation of mine production in 1999 and 2001 respectively. Claude Resource's Seabee Gold Mine continued to produce, attaining record production of 60,200 ounces. The Contact Lake Gold Mine, which started production in January 1995, ceased production in August 1998 due to exhaustion of reserves. The Konuto base metal mine entered into production in the second quarter of 1998 with an anticipated six year mine life.
- Significant developments also occurred in the industrial minerals sector of the province. Potash sales from Saskatchewan exceeded 8.0 million tonnes for the second consecutive year. The amalgamation of Manalta Coal Ltd. and Luscar Ltd. resulted in Luscar Ltd. becoming the sole producer of coal in the province. The Ormiston sodium sulphate plant temporarily ceased production in January 1999.
- Expenditures by industry on mineral exploration for 1998, excluding those on the test mines, are divided as follows:

Mineral	No. of Programs	1997 ($ millions)	No. of Programs	1998 ($ millions)
Uranium	8	$27.32	12	$22.40
Gold	12	3.5	9	2.76
Base metals	8	9.37	8	3.68
Diamonds	5	2.3	4	1.06
Other	5	0.74	4	0.21
Total	**38**	**$43.23**	**37**	**$30.11**

Results:

- During the fiscal year, 369 statistical reports from various sources were analyzed and processed, and 937 copies of nine reports produced for mineral statistics users in the industry were distributed. Numerous requests related to statistics from inside and outside the department were handled.
- The economic and royalty forecasts for metallic minerals, other than uranium, were updated quarterly and maintained throughout the period.
- Approval to abandon one potash production well and four mineral test holes for diamonds were issued. Two potash mineral leases were reviewed. Permits for one mineral test hole and an extensive coal exploration drilling program were issued.
- Nineteen annual mine excavation plans were reviewed.
- Discussions on developing a co-operative and efficient arrangement for collecting and sharing mineral statistics with federal agencies was initiated.
- Eleven reviews of Environmental Impact/Assessment projects.

Resources:

The Mines and Mineral Statistics Section involves two staff for a total cost of $91,000.

Contact:

For further information, contact Pam Schwann, Director, Mines Branch, at 787-2584.

5. Crown Mineral Rights – Disposition and Administration

The major objective of the Crown minerals program is to maximize economic benefits to the province through the disposition and administration of Crown mineral rights. The Mines Branch is responsible for the disposition, development, and conservation of all Crown minerals except for petroleum, natural gas, helium, and oil shale.

The Mining Lands Section of the branch administers and disposes of Crown minerals under the following regulations:

- *The Mineral Disposition Regulations, 1986* for uranium, base and precious metals, and other minerals;
- *The Quarrying Regulations, 1957* for clay, bentonite, silica sand, and other quarriable substances;

- *The Alkali Mining Regulations, 1943* for sodium, potassium, and ammonia sulphate;
- *The Coal Disposition Regulations, 1988* for coal; and
- *The Subsurface Mineral Regulations, 1960* for potash and salt.

Major Activities:

- Under *The Mineral Disposition Regulations, 1986*, a total of 402 claims were staked in 1998-99 covering 422,998 hectares. This represents a decrease of 2.5 times the level of staking activity over the previous year. Most of the staking activity was related to uranium exploration. The total number of claims in good standing on March 31, 1999 was 3,795 covering a total of approximately 3.1 million hectares.
- The following permits and leases were issued during the year:

	Issued During 1998-99		Total in Good Standing March 31, 1999	
	Permits	Hectares	Permits	Hectares
Mineral	3	46,000	5	130,675
Quarrying	1*	696	2*	43,696
Alkali	3	n/a	11	Little Manitou
Coal	0	0	2	488
Subsurface	0	0	1	5,215

*** Includes Special Agreement for silica sand exploration**

	Issued During 1998-99		Total in Good Standing March 31, 1999	
	Leases	Hectares	Leases	Hectares
Mineral	24	6,258	123	141,374
Quarrying	29	2,857	95	21,520
Alkali	1	51	33	12,214
Coal	4	38	805	119,724
Subsurface	0	0	12	217,164
Total	**58**	**9,204**	**1,068**	**511,996**

Results:

- Revenues generated during the fiscal year included:

Annual mineral lease rentals from producing properties	$76,524
Metallic mineral recording fees from permits, claims, and leases; registration of assignments; amalgamation of lands fees; and search abstracts	$252,584
Permit and lease annual rentals from quarrying properties	$26,912
Annual rentals for sodium sulphate leases	$23,913
Coal revenues from lease land permit recording fees and annual rentals	$660,830
Annual potash lease and permit rental payments	$1,073,501

- All mineral dispositions issued under *The Mineral Disposition Regulations, 1986* were digitized, as well as dispositions issued under *The Subsurface Mineral Regulations, 1960*. A pilot project converting the mineral disposition database into a geographic information system (GIS) compatible format was successfully completed.
- Reviews and industry consultations on revisions to *The Alkali Mining Regulations, 1943* and *The Mineral Disposition Regulations, 1986* were initiated.

Resources:

The disposition of Crown mineral rights is administered by five staff. Salary costs were $284,000 and operational costs were $16,000.

Contact:

For further information, contact Pam Schwann, Director, Mines Branch, at 787-2584.

6. Other Services and Support

a) Support Services Section

Geoscientific reports and maps are edited, formatted, and produced by the Support Services Section and sold to industry and the general public through the Communications Branch.

The unit's work focuses specifically on thematic monochrome and colour geological maps and text figures. These include: comprehensive 1:1,000,000 scale maps of geology and surficial features of the province; compilation bedrock and metallogenic maps at 1:250,000 scale, outcrop geology, bedrock geology, and contour maps at various scales; stratigraphic cross-sections; and small size maps and figures for inclusion in reports and externally published scientific papers. With the changing demands of clients and budgetary constraints within the department, the section has moved to a more cost-effective print-on-demand process for some products.

Major Activities:

- Two miscellaneous reports and other miscellaneous materials were produced in 1998-99. This represents 1470 pages of text, 11 monochrome maps, three colour maps, and one digital product. In conjunction with the Geological Survey of Canada, three open file reports were released.
- Two final reports, one miscellaneous report, one compilation map of the geology of Saskatchewan, one print-on-demand colour map, and three digital products are at various stages of production.
- Figures for papers in scientific journals, slides, and graphics for conference presentations and displays, and other promotional material for the department were produced.

Resources:

Editing, desktop publishing, and map production is undertaken by a manager and four cartographers at a cost of $204,000. A project geologist/scientific editor is responsible for scientific content. Printing and

reprographics costs, supplies, and general operational expenses for this section were $47,000.

Contact:

For further information contact Carol Brown, Manager, Support Services Section, at 787-2590.

b) Saskatchewan Geological Survey Open House Meeting 1998

The annual Open House is the forum at which geoscience agencies and the mining and mineral exploration industry, active in Saskatchewan, present results from their current projects and research to each other and the general public. The 1998 Open House, from November 30 to December 2, was again held in Saskatoon. The two and a half-day meeting incorporated three half-day technical sessions and a half-day of poster presentations.

Major Activities:

Organizations presenting information included the Saskatchewan Geological Survey, the Geological Survey of Canada, the Saskatchewan Research Council, the Department of Geological Sciences of the University of Saskatchewan, and the Geology Department of the University of Regina. The 27 technical talks were presented as follows: Saskatchewan Geological Survey (11), the Geological Survey of Canada (2), the University of Saskatchewan (2), the University of Regina (1), and the mining and mineral exploration industry (11).

Results:

- Delegates numbered 332.
- Representatives from a number of mining and exploration companies were able to meet for discussions with the Minister of Energy and Mines.
- Departmental publication sales exceeded $4,000. One of the most popular products was the new CD-ROM version of the Geological Map of Saskatchewan, now in its second production run.

Resources:

Operational costs were approximately $15,000.

Contact:

For further information, contact Dr. Gary Delaney, Northern Geological Survey Branch, at 787-1160.

c) Resident Geologists' Offices

The resident geologists in La Ronge and Creighton monitor the mineral exploration industry in northern Saskatchewan and provide up-to-date information on exploration and mining activities and opportunities. The La Ronge office maintains files on current mineral claims, topographic maps, air photos, geological maps and reports, and assessment work submissions. The Creighton office has current claim maps.

Major Activities and Results:

- The two resident geologists were headquartered in La Ronge. One of the resident geologists was available for consultation in Creighton on a bi-monthly basis.
- A total of 704 visitors were received at the La Ronge office.

Resources:

The resident geologists' offices were staffed by two geologists, a mining recorder, a student, and one clerk. Salary costs were $191,000 and operational costs were $28,000.

Contact:

For further information, contact Dr. Andrew Gracie, Resident Geologist, at 425-4499.

d) Public Information and Education

The objective of the public information program is to promote awareness of Saskatchewan's mineral industry and mineral resources and potential amongst the general public and to the mining and exploration industry outside the province. This is achieved by responding to specific inquiries, producing and distributing educational materials, developing and exhibiting promotional displays for major exhibitions, and publishing articles in trade magazines.

Major Activities and Results:

- Displays illustrating Saskatchewan's mineral resources and potential, and the activities of the department and the mineral industry, were exhibited at the Prospectors' and Developers' Association of Canada (PDAC) meeting in Toronto.
- The report "Saskatchewan Exploration and Development Highlights 1998" was distributed at the Geological Survey Open House in Saskatoon, and at the PDAC in March. The new 1999 edition of the Mineral Resource Map of Saskatchewan was distributed at the PDAC.
- A display highlighting the use of minerals in everyday life and the range of minerals produced in Saskatchewan went on show at the Saskatchewan Science Centre during Mining Week in May.
- Several members of staff taught parts of an EdGeo Workshop for teachers who intend to teach earth science in September. The course was run in co-operation with the Saskatchewan Geological Society and the Saskatchewan Mining Association.
- Three new posters for schools, depicting gold ore, potash, and halite were produced in co-operation with the department's Communications Branch.

Resources:

The unit is staffed by one geologist half-time, with assistance from other department staff. Salary costs were $34,000 and operational costs were $10,000.

Contact:

For further information, contact Dave MacDougall, Northern Geological Survey Branch, at 787-2579.

Petroleum and Natural Gas Division

1. Overview of Division

The Petroleum and Natural Gas Division has major responsibilities in all areas related to provincial jurisdiction over oil and gas resources. The responsibilities include the disposition and management of Crown oil and gas rights, well licensing and monitoring of field activities, oil and gas conservation (including the determination of reserves and producibility estimates), maintenance of production and disposition statistics, and royalty and tax legislation.

The programs are carried out by the Petroleum Development Branch, Engineering Services Branch, Geology and Petroleum Lands Branch, Economic and Fiscal Analysis Branch, and Petroleum Statistics Branch.

The division also plays a co-ordinating role with respect to the activities of the Oil and Gas Conservation Board.

The executive administration costs for the division, including the costs of the Oil and Gas Conservation Board and certain temporary resource costs for deep rights reversion, were approximately $394,000 for the year.

2. Resource Development Programs

a) Oil and Gas Reservoirs

The oil and gas reservoir assessment program evaluates oil and gas reservoirs, wells, and projects to determine reserves for the purposes of encouraging and facilitating resource development. Reservoirs and wells are also assessed when evaluating industry proposals for horizontal drilling, waterfloods, enhanced recovery, waste water disposal wells, off-target wells, commingling, unitization, and pipelines.

The reserve data is used extensively by the government in making policy decisions on energy supply and demand. This data is also used by the oil and gas industry in making investment decisions.

Industry applications are assessed promptly to ensure investments are not delayed.

The mandate for this program comes from *The Oil and Gas Conservation Act, The Crown Minerals Act, The Pipe Lines Act,* and their respective regulations. This legislation provides the rules under which the oil and gas industry must operate.

Major Activities:

- 1997 reserves were reviewed and published.
- In excess of 600 applications for various projects such as horizontal drilling, waterfloods, enhanced recovery, waste water disposal wells, good production practice, off-target wells, commingling, unitization, and pipelines were reviewed.

Results and Impacts:

- The review of reserves for 1997 showed an increase in initial oil reserves of 39.0 million cubic metres and similarly, an increase in initial gas reserves of 4.6 billion cubic metres. At the end of 1997, there were remaining oil reserves of 185.8 million cubic metres and remaining gas reserves of 76.0 billion cubic metres.
- Remaining reserve estimates for 1998 (as shown by Figures 3 and 4) show a modest decrease for oil and a slight increase for gas from 1997.
- As shown in Figure 5, the approval of industry applications resulted in the drilling of 265 horizontal wells in 1998, representing $185 million in investment. Production from horizontal wells averaged 14.3 thousand cubic metres per day or 22.6 per cent of the total provincial production in 1998.
- Forty-six applications for new or expanded waterfloods, pressure maintenance wells and enhanced oil recovery projects resulted in significant investments in new facilities with great potential for increases in oil production. The 58 waste water disposal well application approvals allowed for more efficient and economical operation of oil facilities in an environmentally responsible manner.
- Thirty-eight pipeline construction permits were issued in 1998 providing for new investments and more efficient transportation of oil and natural gas. Fees are charged for pipeline permit applications which resulted in revenues of $14,600.

Resources:

The Engineering Services Branch is responsible for this program. Approximately $445,000 and 70 per cent of the 12 branch staff were allocated to this program.

Contact:

For further information, contact Myron Sereda, Director, Engineering Services Branch, at 787-2318.

b) Oil Forecasting

The oil forecasting program evaluates the impact of short and long-term world price movements and differential adjustments, provincial royalty and tax situations, federal

income tax provisions, and technological changes related to the oil and gas industry in Saskatchewan. The impact is measured by projecting the trends in drilling activity, production, revenue, employment, and investment.

This program is required for internal government economic and budget planning purposes, for internal analysis of royalty and freehold production tax options, and for response to a number of inquiries from energy boards, municipalities and oil producing, refining and transporting companies.

Major Activities and Results:

- Numerous forecasts were prepared throughout the year to measure the economic and financial impact the oil industry has on the province today and what is expected into the future. Production, revenue, employment and investment were the main parameters measured.
- The forecasting model was also used to provide input into the energy and demand report being updated by the National Energy Board, to review various industry proposals and to assist pipeline companies in planning future investments.

Resources:

The program activities were carried out by one permanent professional on a full-time basis and two permanent professionals on a part-time basis within the Economic and Fiscal Analysis Branch at a total cost of approximately $76,000.

Contact:

For further information, contact Dale Fletcher, Director, Economic and Fiscal Analysis Branch, at 787-2605.

Figure 3 – Remaining Gas Reserves

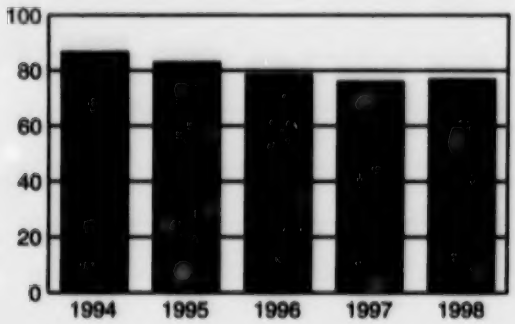


Figure 4 – Remaining Oil Reserves

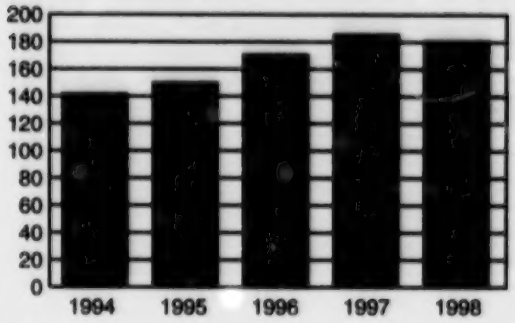
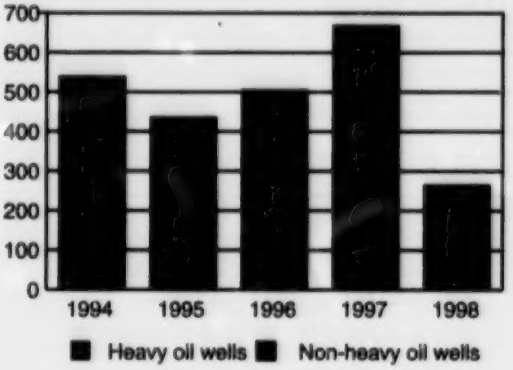


Figure 5 – Saskatchewan Horizontal Wells Drilled



3. Oil and Gas Fiscal Systems Program

The oil and gas fiscal systems program is responsible for developing and implementing Crown royalty and freehold production tax structures and incentives applicable to crude oil and natural gas production in Saskatchewan. The program ensures:

- proper systems are in place in order for the province to receive a fair share of crude oil and natural gas revenues from producing companies;
- reasonable levels of exploration and development activity in the province; and
- maximum economic recovery of crude oil and natural gas from established reservoirs.

The royalty and tax structures and incentives are reviewed from time to time as technology and economic conditions change. Consultation with industry is a key component of all reviews. Following the consultation process, if there is a need to revise an existing structure or incentive or to implement a new structure or incentive, regulations are amended and circulars are prepared for distribution to industry.

The mandate of the program comes from:

- *The Crown Minerals Act* and associated regulations which provide authority to levy a royalty on oil and natural gas produced from or allocated to Crown lands; and
- *The Freehold Oil and Gas Production Tax Act* and associated regulations which provide authority to levy a production tax on oil and natural gas produced from or allocated to non-Crown lands.

Major Activities and Results:

- The regulations containing the modifications to the Crown royalty and freehold production tax regimes announced by the Minister of Energy and Mines on February 9, 1998, were drafted, reviewed by industry, finalized and put in force. Information circulars, which provide detailed explanations of the fiscal structures, incentives and administrative policies, were also updated and prepared for access from the department's web site.
- A number of industry proposals were reviewed to determine impacts on resource recovery, and provincial costs/benefits.
- During the year, nine net royalty leases were analyzed for purposes of converting them to standard Crown leases. In keeping with the analysis, the leases were converted with the province receiving cash payments totaling approximately $54,000 and companies making major work commitments that would extend the life of wells and provide further royalty/tax revenue to the province.
- Other significant tasks performed within the oil and gas fiscal systems program relate to:
  - reviewing over 2,000 new well licences to determine the proper Crown royalty and freehold production tax structure and incentive volume for the wells; and
  - adjusting every month the basic Crown royalty and freehold production tax structures for oil and gas production in accordance with established price sensitive policies.

Impacts:

- The significant decrease in crude oil prices resulted in 1,694 oil and gas wells being drilled in 1998 compared to a record 3,935 in the previous year.
  - Approximately 16 per cent of the total wells were drilled horizontally as oil wells.
  - Approximately 83 per cent of the total wells were cased for production of which 56 per cent were eligible for a royalty/tax volume incentive.
  - The table entitled "New Oil and Gas Wells Drilled in 1998" provides additional breakdown of the drilling.
- Over the 1998-99 fiscal year, approximately $300 million in Crown royalty and freehold production tax revenue was generated for the province by the oil and gas industry. This represents a decrease of approximately $100 million (or 25 per cent) from the royalty/tax revenue generated in the previous fiscal year. This decline is primarily due to the significantly lower oil prices during the fiscal year.
  - In 1998-99, the average royalty/tax rate for oil and gas was approximately 12.1 and 15.6 per cent respectively resulting in a provincial average of approximately 12.8 per cent.
- Figure 6 illustrates the March 1999 Crown royalty curves for vertical oil wells (heavy and non-heavy) and gas wells drilled on or after February 9, 1998. The curves, which are adjusted every month in accordance with established price sensitive policies, apply after volume incentives are produced.

Resources:

The program activities were carried out by four staff on a full-time basis and two staff on a part-time basis within the Economic and Fiscal Analysis Branch at a total cost of approximately $362,000.

Contact:

For further information, contact Dale Fletcher, Director, Economic and Fiscal Analysis Branch, at 787-2605.

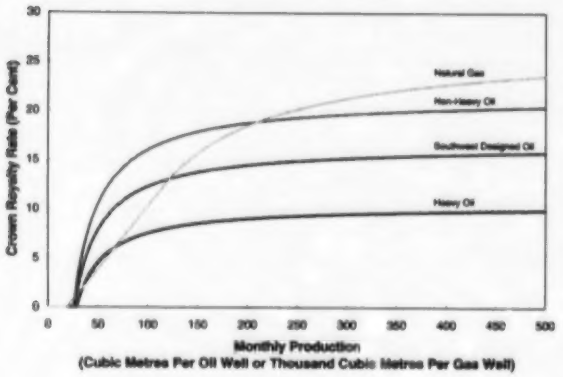
New Oil and Gas Wells Drilled in 1998

Well Category	Producers	Abandoned	Service	Total
Oil:				
Conventional:				
Vertical	579	174	46	799
Horizontal	250	3	5	258
Total	829	177	51	1,057
Enhanced Oil Recovery (EOR[1]):				
Vertical	4	0	n/a	4
Horizontal	7	0	n/a	7
Total	11	0	n/a	11
Total Oil Wells	840	179	51	1,068
Gas:				
Total (all vertical)	572	54	0	626
Provincial Total	**1,412**	**231**	**51**	**1,694**

n/a means "not available"

[1]EOR oil means oil recovered due to the implementation of enhanced oil recovery projects. These projects include fireloods, steamfloods, and CO2 floods but exclude the less exotic waterfloods.

Figure 6 – March 1999 Conventional Royalty Curves for New Vertical Oil and Gas Wells Drilled on or after February 9, 1998



4. Resource Regulatory Programs

a) Oil and Gas Environmental and Safety Standards

The environmental and safety standards program establishes guidelines for, and monitors the drilling, production, and well abandonment activities of the oil and gas industry. Policies and procedures are established for casing wells, handling of drilling fluids, reporting and cleaning up spills, safe distances for wells and equipment, injection well design, and well abandonment. Ongoing monitoring of oil industry activity ensures operations are being conducted in accordance with established guidelines and that environmental impact is negligible.

Field offices are situated in Lloydminster, Kindersley, Swift Current, and Estevan.

The mandate for this program comes from:

- *The Mineral Resources Act, 1985* and *The Sedimentary Basin Geophysical Exploration Regulations, 1985* which establish operating procedures for geophysical activities; and
- *The Oil and Gas Conservation Act* and associated regulations which govern industry activity as it pertains to drilling, production, and well abandonment.

Major Activities:

The following guidelines were completed and distributed during the 1998-99 fiscal year:

- *"Restoration of Wellsites and Associated Facilities on Cultivated Lands in Saskatchewan"*, Saskatchewan Petroleum Industry / Government Environmental Committee Guideline No. 2, January 1, 1999.

  The intent of this guideline is to provide oil and gas producers with restoration guidelines which will ensure consistent quality of restoration resulting in reclaimed sites that are clean, stable and have little risk of impaired capability.

- *"Restoration of Spill Sites on Saskatchewan Agriculture and Pasture Lands"*, Saskatchewan Petroleum Industry / Government Environmental Committee Guideline No. 3, January 1, 1999.

  This is a guide to assist industry and landowners in the restoration of crude oil, salt water and emulsion spill sites. It also gives a brief overview of dealing with refined chemical spills.

- *"Saskatchewan Upstream Petroleum Sites Remediation Guidelines"*, Saskatchewan Petroleum Industry/Government Environmental Committee Guideline No. 4, March 1, 1999.

  These guidelines provide a common set of remediation criteria for oil and gas companies, surface landowners and regulators. The criteria provided in the guidelines are generally applicable to upstream petroleum sites, such as well sites, battery sites, compressor stations, upstream waste processing facilities or other facilities impacted by primary exploration, production, or the transportation of unrefined resources.

- *"Environmental Site Assessment Procedures for Upstream Petroleum Sites"*, Saskatchewan Petroleum Industry / Government Environmental Committee Guideline No. 5, March 1, 1999.

  The site assessment process outlined in these guidelines is designed to assist in the verification of the existence or non-existence of contamination, determination and conceptualization of the extent of contamination and selection of the most appropriate mitigative/treatment options.

The above guidelines were distributed to all companies licensed to operate oil and gas wells in Saskatchewan and also to all rural municipalities that have oil and gas wells located within their boundaries. Individual landowners and environmental consulting companies operating in Saskatchewan may obtain copies of the guidelines at any Saskatchewan Energy and Mines field office, or by contacting the Communications Branch in Regina.

- Guidelines for addressing the environmental considerations for the safe and responsible management of drilling fluids in Saskatchewan were completely revised. The revised guidelines entitled *"Information Guidelines GL 99-03, Saskatchewan Drilling Waste Management Guidelines"* will be distributed to industry and rural municipalities later in 1999.
- Staff actively participated with other agencies in completing a comprehensive land use strategy for the Fur Lakes area located in central Saskatchewan. They continue to be engaged with the development of similar land use plans for the Whitehood and Dore/Smoothstone areas (northwest) and the Mistatim Marsh, Bjorkdale West Forest and Stove Creek area (east central) portions of the province.

- Assistance continued to be given to Saskatchewan Agriculture and Food and Saskatchewan Environment and Resource Management as they work toward harmonizing their approach with respect to the leasing of Crown land for the purpose of oil and gas development.
- Staff continued to work with members of The Great Sands Hill Planning Commission and staff from Saskatchewan Municipal Affairs, Culture and Housing in an effort to maintain and enhance communication between the commission, rural municipalities and various companies from the upstream petroleum and natural gas industry. Staff members are regularly invited to attend and give presentations at rural municipal council meetings. These opportunities are utilized to up-date the ratepayers in what they might expect the upstream industry to be doing in their respective areas.
- Staff gave presentations pertaining to the Saskatchewan Petroleum Industry/Government Environmental Committee Guidelines at special environmental conferences in Calgary, Lloydminster and Estevan.
- Field staff conducted 26,603 well, battery, and rig site inspections, monitored the clean up of 1,259 oil and salt water spills, and assisted in resolving 20 landowner complaints.
- During the 1998 calendar year field staff inspected drilling rigs and reported pertinent information on the province's 1,683 new oil and gas wells drilled (see figure 7). Workover programs were also approved, monitored and reported.
- Field staff conducted 3,152 inspections at water injection and disposal facilities to ensure proper water handling and injection well bore integrity.

Results and Impacts:

- Staff participation in developing and implementing comprehensive land use strategies for various lands managed by Saskatchewan Agriculture and Food and Saskatchewan Environment and Resource Management continues to foster excellent working relationships with other government agencies and the general public with regards to solving both real and perceived problems which arise from time-to-time in the process of developing our petroleum and natural gas resources.
- Inspections conducted by field staff ensured that industry complied with regulations governing their operations, thereby minimizing environmental impacts.
- Through the reporting process, up-to-date well information is maintained for use by government, industry and the public.
- By having staff give presentations relating to Saskatchewan Energy and Mines environmental guidelines at various seminars, the guidelines are rapidly being acknowledged inter-provincially.

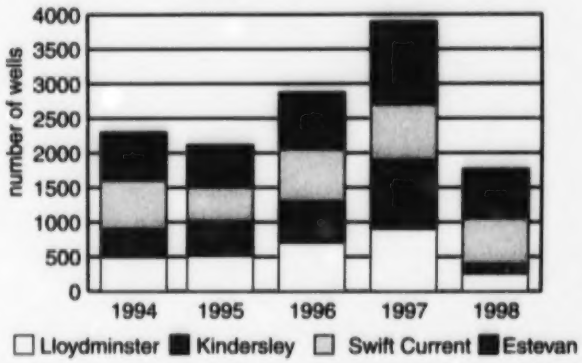
Resources:

The program activities were the responsibility of the Petroleum Development Branch and were conducted by 16 field officers, one environmental affairs manager, four clerical staff and three summer students. Salary, travel, and other incidental costs for this work unit were approximately $1,154,600.

Contact:

For further information, contact, J.A. Brian Mathieson, Director, Petroleum Development Branch, at 787-2593.

Figure 7 – Oil and Gas Wells Drilled by Area



b) Oil and Gas Conservation

The oil and gas conservation program establishes, monitors, and enforces sound oil and gas conservation standards to ensure responsible development of the province's oil and gas reserves.

The program ensures pool boundaries and well spacing orders are current and establishes and monitors production limitations to ensure that they are not exceeded.

The mandate for this program comes from *The Oil and Gas Conservation Act, The Crown Minerals Act, The Pipe Lines Act,* and associated regulations which provides the rules under which the oil and gas industry must operate.

Major Activities and Results:

- The ongoing activities of establishing pool boundaries and well spacing orders were carried out with 73 orders issued in 1998.

- Production allowable limits were issued for all new oil and gas wells unless good production practices were granted.
- Oil and gas production was monitored to determine if well production exceeded that allowed. Notification and warnings were sent to all companies that exceeded their allowables.

Resources:

The Engineering Services Branch is responsible for this program. Approximately $190,000 and 30 per cent of the 12 staff resources of the branch were allocated to this program.

Contact:

For further information, contact Myron Sereda, Director, Engineering Services Branch, at 787-2318.

c) Geophysical and Well Licences

The geophysical and well licences program reviews applications and issues licences to explore, drill, operate, and produce oil, gas, and related service wells. Applications are reviewed to ensure compliance with regulations. Geophysical contractors, crews, and blasters are licensed to ensure certain operating standards are met, and to maintain a current record of companies conducting geophysical work in the province. By licensing the drilling and operation of oil, gas, and service wells, the department ensures Crown mineral rights have been properly acquired, wells are properly located, and drilling and casing requirements are met according to regulations.

The number of well licence applications issued during the 1998-99 fiscal year averaged 125 per month. The decrease in the number of licence applications received is directly related to the decrease in the price for oil.

The mandate for this program comes from:

- *The Mineral Resources Act, 1985* and *The Sedimentary Basin Geophysical Exploration Regulations, 1985* which provide the authority for geophysical licences; and
- *The Oil and Gas Conservation Act* and associated regulations which govern the licensing of oil, gas, and service wells.

Major Activities and Results:

- There were a total of 1,683 oil, gas, stratigraphic, and service wells drilled during the 1998 calendar year.
- During the fiscal year, 1,500 well licences, 91 geophysical contractor licences, 252 crew certificates, and 764 blaster permits were issued.
- A total of 5,838 well transfers and 4,431 well name changes were registered. There were also 6,754 name changes registered as a result of corporate name changes and amalgamations.
- During the 1998-99 fiscal year fees charged for various licences, permits and services generated revenues of $1,212,140.
- An increase in the number of wells being transferred and/or assigned to new operators has again resulted in large numbers of industry personnel who are unfamiliar with Saskatchewan operating and reporting procedures. Responses were provided to numerous telephone and written inquiries concerning spacing requirements, off target wells, drilling fluid disposal, spill clean up procedures, abandonments and site reclamation and restoration.

Resources:

Five permanent staff members of the Petroleum Development Branch undertook program activities. Assistance was received from two part-time employees and two temporary employees. Salary and other costs for the work unit were approximately $261,500.

Contact:

For further information, contact J.A. Brian Mathieson, Director, Petroleum Development Branch, at 787-2593.

5. Crown Oil and Gas Rights

a) Disposition

The province develops oil and gas mineral rights by selling the use of those rights to industry for exploration and development. The disposition of Crown oil and gas rights to industry is in the form of special agreements, special exploratory permits, exploration licences, permits, drilling reservations, and leases. Specific lands requested by oil and gas companies are advertised in sales held during the year. The successful bidders in the sale are awarded the rights which permit companies to explore for and to produce oil and gas.

The mandate for this program comes from *The Crown Minerals Act* and *The Petroleum and Natural Gas Regulations, 1969* which provide the authority for disposition of Crown oil and gas rights by the sale process.

Major Activities and Results:

- Six sales held in 1998-99 resulted in revenues of $48.7 million. Revenue derived from the sale of petroleum and natural gas rights for the past five fiscal years is shown in Figure 8.
- Mineral rights disposed of during the fiscal year totalled 520,345 hectares. This consisted of five special exploratory permits containing 106,043 hectares, two permits comprising 15,256 hectares, 67 exploration licences covering 189,515 hectares, and 1,267 lease parcels containing 209,531 hectares.

- Leases sold as a result of deeper rights reversion totalled 29,790 hectares bringing in bonus bid revenues of $5,593,115 or 22 per cent of sale revenue for this time period.

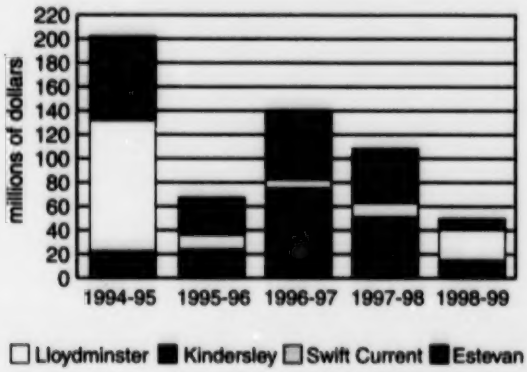
Resources:

The Geological Mapping and Land Evaluation Section of the Geology and Petroleum Lands Branch is responsible for this program. The program activities are undertaken by five and one-half staff resources with salary costs of $333,000. Printing and other costs were about $11,000.

Contact:

For further information, contact Gordon Hu[illegible]h, Director, Geology and Petroleum Lands Branch, at 787-2606.

Figure 8 – Revenue Received from Sales of Crown Petroleum and Natural Gas Rights



b) Administration

The Petroleum Lands Section administers and reviews all dispositions of Crown oil and gas rights to ensure that regulatory requirements are met. This process was expanded with the implementation of the requirements for deep rights. A registry of conveyance agreements, encumbrances, and securities related to Crown dispositions is maintained to monitor business activity and regulated operations.

A database is used to invoice lease rentals and to monitor offset commitments and compensatory royalties. The registry system and search service is used by the oil and gas industry, lawyers, financial institutions, and many others.

The mandate for this program comes from *The Crown Minerals Act* and *The Petroleum and Natural Gas Regulations, 1969* which establish the requirements for disposition administration and provide authority for the registry and search system.

Major Activities:

- All expiring and non-producing petroleum and natural gas dispositions were reviewed to determine whether the dispositions should be continued. A total of 12,072 dispositions were reviewed in this fiscal year.
- A total of 4,868 disposition transactions and 5,957 searches were performed.
- Work requirements of permits and drilling reservations were monitored and offset commitments were reviewed and enforced.

Results:

- As indicated in the following table, at the end of the fiscal year, 7.35 million hectares of Crown oil and natural gas rights were under disposition.

Oil and Natural Gas Dispositions

	As of March 31, 1999		As of March 31, 1998	
	Number	Hectares	Number	Hectares
Leases	20,984	4,981,533	20,261	4,740,547
Permits	154	1,147,865	217	0
Exploration Licences	67	189,515	–	–
Special Exploratory Permits	14	984,049	11	948,807
Special Agreements	5	45,066	5	45,066
Drilling Reservations	2	3,872	11	34,287
Total	**21,226**	**7,351,900**	**20,505**	**7,298,995**

- Twelve helium leases were under disposition with an area of 22,819 hectares and two helium permits were under disposition with an area of 78,540 hectares.
- Two oil shale leases were under disposition with an area of 32 hectares and one oil shale permit was under disposition with an area of 39,581 hectares.
- Two gas storage agreements consisting of 518 hectares and 10 Lease of Space Agreements containing 25,462 hectares were in effect.
- Revenue from fees for registry services was $366,174.

Resources:

The Petroleum Lands Section carries out the duties related to this program with technical support from the Geological Mapping and Land Evaluation Section. Both sections belong to the Geology and Petroleum Lands Branch. A total of nine staff are involved in this program. Cost of the program was approximately $305,000 for salaries and $2,000 for expenses.

Contact:

For further information, contact Ron Pelletier, Administrator of Petroleum Lands, at 787-2540.

6. Support Program

Oil and Gas Production and Disposition Data

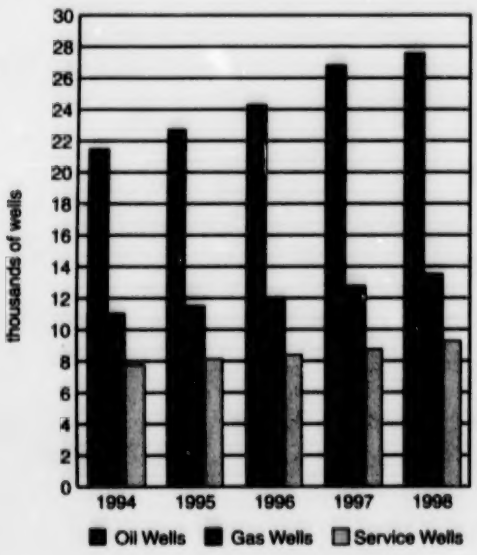
The oil and gas data program collects data related to the production and disposition of crude oil, natural gas, water, and associated products from all producing wells in the province.

The database is used in the collection of royalties and taxes, forecasting, monitoring, and the evaluation of Crown lands under disposition. It is also used to analyse and develop resource management policy and fiscal regimes and to establish, monitor, and enforce oil and gas conservation and environmental and safety standards.

As well, the oil and gas industry relies extensively on the database for production information to facilitate its exploration and development activities in the province. Data is also used by consulting firms, federal and provincial government agencies, universities, and the general public.

The mandate for this program comes from *The Oil and Gas Conservation Act* and regulations which require companies to submit monthly statistical data and any other information to the department.

Figure 9 – Wells Capable of Production/Injection



Major Activities and Results:

- In excess of 55,000 statistical reports on the production and disposition of crude oil, natural gas, water, and associated products from all producing wells in the province were processed and verified each month. The number of wells capable of production rose by 1,579 wells to 41,141. The number of wells capable of production by well type for the past five years is shown in Figure 9.
- During the fiscal year, system related work was concentrated on completing the conversion, testing and implementation of the Production-Disposition System (PDS) batch programs from the COBOL VS to COBOL MVS program language and ensuring that these programs are Year 2000 compliant. The conversion and testing of approximately 130 batch programs was completed and implemented into the production environment by the fall of 1998 bringing the two-year project of converting the entire PDS system to the new programming language and to be Year 2000 ready to a successful conclusion. Branch staff also provided user support and performed testing of several Well Information System (WIS) functions and programs in order to accommodate oil royalty/tax structure changes that were announced during the latter part of the previous fiscal year. These were completed and implemented into production in the fall of 1998.
- After extensive consultation with representatives of Saskatchewan producers, industry associations including CAPP and SEPAC and vendor companies, several policy initiatives were developed and implemented to address issues related to Year 2000 reporting, mandatory electronic data submission and reporting compliance. Guidelines for these initiatives were developed as well as all the forms, reports, statements, instruction directives and an electronic data submission manual were revised and updated to meet the objectives of these initiatives. An information package of the guidelines, forms, reports, instruction directives and electronic data submission manual was provided to industry in December 1998. When these policy initiatives become effective with the production month of May 1999, there will be a significant reduction in the volume of hardcopy reports received by the department and an improvement in the accuracy and timeliness of data submitted by industry.
- An estimated 1,865 status updates on new and existing wells and units were made due to changes related to the date of first production, recompletion, reclassification, and royalty and tax eligibility.
- About 1,180 requests from industry for suspension of an active well, or for production resumption of an inactive well, were handled to facilitate reporting and royalty and tax collection.
- Over 5,200 applications related to facility codes and change of operatorship were reviewed and processed to ensure proper reporting and the integrity of the database.

- The terms and conditions of all gas contracts, invoices, transportation agreements, and heating value information were analysed, entered and updated to numerous system files, including the natural gas contract database, in order to facilitate various price monitoring functions required for the verification of reported sales data. The accuracy of the sales information directly affects royalty/tax revenues.
- Five hundred and seventy-five copies of the Monthly Oil and Gas Production Report, 468 copies of the Drilling Activity Report, and 105 copies of the Mineral Statistics Yearbook were published and distributed to industry and other users.
- Approximately 1,120 requests for statistical information from industry clients, federal and provincial government agencies, consulting firms, universities, and the general public were handled on the basis of a one-day turnaround. Statistics are provided in a variety of formats and on magnetic tapes, microfiche, diskette, or printout.
- Revenue generated from the sale of reports and statistics totalled more than $44,000.

Resources:

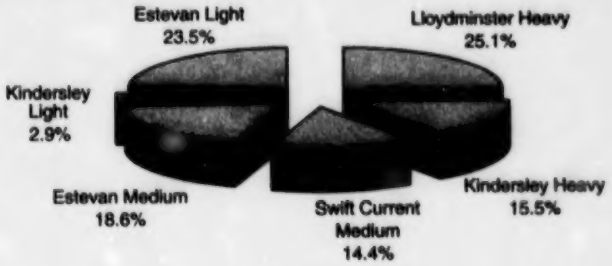
The program activities were undertaken by the Petroleum Statistics Branch. The total cost of the program was $706,000 including the salaries and related expenses for 20 permanent staff members. In addition, computer system and analyst costs for the production and disposition system were about $238,000.

Contact:

For further information, contact Joe Dang, Director, Petroleum Statistics Branch, at 787-2607.

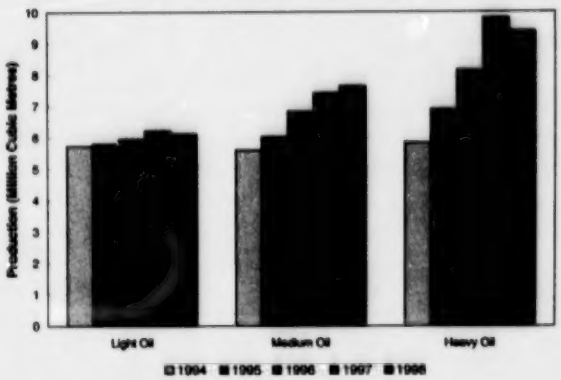
Figures 10 to 14 provide statistical information on oil and gas wells capable of production, actual production, and prices.

Figure 10 – Crude Oil Production by Area and Quality



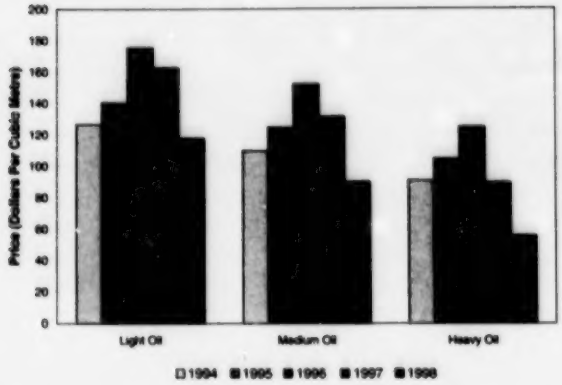
Saskatchewan's oil production is made up of different qualities of crude oil commonly identified as light, medium, and heavy found in different geological zones and geographical areas. In 1998, approximately 41 per cent was heavy oil, 33 per cent was medium oil, and 26 per cent was light oil.

Figure 11 – Crude Oil Production



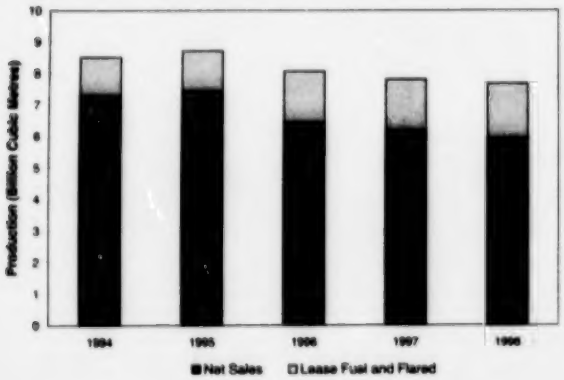
Total oil production for 1998 is estimated to be 23.2 million cubic metres compared to 20.9 million cubic metres in the previous year.

Figure 12 – Average Crude Oil Prices



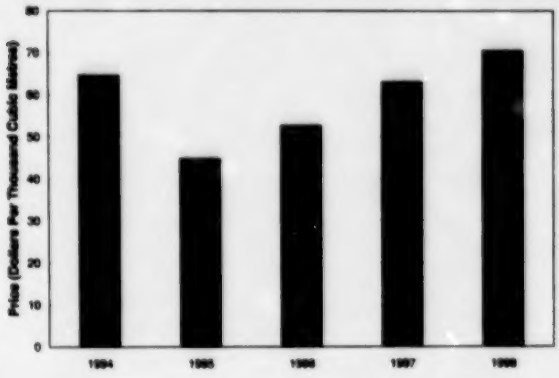
The average Saskatchewan crude oil price for 1998 is estimated to be $83.51 per cubic metre which represents a 32 per cent decrease from the 1997 average price of $122.32 per cubic metre. This decrease followed the trend in world oil prices and exchange rates over that time period.

Figure 13 – Natural Gas Production



Natural gas production in Saskatchewan decreased in 1998 due to normal production declines of existing wells. Gas production decreased to approximately 7.7 billion cubic metres in 1998, a decrease of 1 per cent from the previous year's production of 7.8 billion cubic metres.

Figure 14 – Average Natural Gas Prices at Fieldgate



For 1998, the average Saskatchewan natural gas price at the fieldgate is estimated to be $70.51 per thousand cubic metres. This represents a 12 per cent increase from the average price of $63.11 per thousand cubic metres in 1997. Natural gas prices averaged higher in 1998 due to expectations of a colder winter and increased pipeline export capacity.

Finance and Administration Division

1. Overview of Division

The Finance and Administration Division is responsible for mineral revenue collection and audits, maintaining records of mineral rights, internal administration and personnel, implementing treaty land entitlement, computer systems services, communications and publications.

The programs are carried out by four branches: Mineral Revenue Branch, Systems Services Branch, Personnel and Administration Branch, and Communications Branch.

2. Revenue Collection Program

The revenue collection program ensures that the resource revenues owing to the province are collected, administers mineral land ownership records, and mineral compensation and trust expenditures are made appropriately.

The mandate for this program comes from:

- *The Crown Minerals Act* and associated regulations which prescribe royalties, rentals, and fees payable by persons engaged in exploring, developing, and producing minerals that are owned by the Crown and prescribes penalties to be applied to late payments;
- *The Freehold Oil and Gas Production Tax Act* and associated regulations which prescribe amounts payable by producers of oil and gas from wells drilled on freehold lands; and
- *The Mineral Taxation Act, 1983* which prescribes base and profit-related payments due from potash producers, production taxes payable on freehold coal, and mineral rights tax payable by taxable mineral owners.

Major Activities:

- All cash is received, recorded, and deposited on a daily basis.
- Oil and gas royalty and tax assessments, lease rentals, mineral rights tax, subscriptions, miscellaneous fees and charges, interest, and penalties are invoiced.
- Field audits of resource companies were performed and desk reviews conducted to ensure appropriate revenues were received.
- Surrenders, assignments, and transfer documents pertaining to mineral rights were processed throughout the year to ensure the integrity of the Crown and the freehold mineral ownership records and the mineral rights tax database.

Results:

- Total revenue collected for 1998-99 was $631.6 million; for a breakdown of resource revenue, see the table on page 34.
- The revenue impact of field and desk audits during 1998-99 was $5.2 million. Considerable progress was made in completing outstanding field audits from prior years.
- Compensation payments to former mineral owners totaled $561,868 in 1998-99, including a $271,000 exchange of compensation rights.

Resources:

The mineral revenue collection program is administered within the Mineral Revenue Branch by 28 staff at a salary cost of $1,321,600 and $215,600 in support costs.

Contact:

For further information, contact Hal Sanders, Director, Mineral Revenue Branch, at 787-2832.

3. Support Programs

a) System Services

System Services Branch provides planning, management, development and system support functions for the department's information and computer systems. This involves system development, acquiring and maintaining computer hardware and software, contracting for consulting and mainframe services, network administration, data security, and data entry.

The department currently operates 15 major systems on a regular production basis. System analysis, development, and maintenance functions are performed by department staff. Mainframe services are contracted to Information Systems Management Corporation (ISM).

Major Activities and Results:

- Ensuring that all systems were Year 2000 compliant used considerable resources in 1998-99. Work has now been completed on the major oil and gas systems. Some work still remains on one financial system, but all changes should be complete by the summer of 1999.
- A new GIS based system was developed and implemented to replace the well map board. This new system gives staff desktop access to well location and pool and unit boundary maps.

- The branch successfully completed its conversion from using outside consulting services to reliance on in-house staff for systems analysis services.
- Contract negotiations for mainframe services were completed and a contract signed with ISM Corporation.
- Changes to the oil and gas royalty status rules were made and implemented in 1998-99.
- Work was completed on connecting five field offices using a wide area network, a new e-mail system installed, and access to the internet was improved.
- 1999-2000 plans include completion of all Year 2000 work, enhancements to the new well map GIS system, system changes to allow electronic submission of the petroleum and natural gas monthly reports, redevelopment of the royalty forecasting system and the mineral rights administration systems, and upgrading the client server and network operating systems.

Resources:

System Services consists of 16 staff for a salary cost of $814,000. Expenditures for mainframe services totalled $395,000. Other computer items and general operations were $279,500. Total expenditures for the year were $1,488,500.

Contact:

For further information, contact Adeline Skwara, Director, System Services at 787-2548.

b) Human Resources

Under the authority of *The Public Service Act*, the Human Resources Unit provides planning and support on human resource matters. The operating expenditures were $160,100 for the three-person unit. $153,100 was spent on salaries and $7,000 on operating expenses.

1998-99 Goals, Activities and Results

Goals

- To manage a strategic recruitment and selection process for the department.
- To provide responsive and effective classification services and advice.
- To foster a healthy labour relations climate.

Activities and Results

The unit managed 17 permanent appointments and 35 non-permanent appointments. Four of the permanent competitions and all the non-perm appointments were handled directly by the department under delegated authority from the Public Service Commission. Nine permanent positions and seven non-permanent positions were filled by employment equity target group members. All recruitment actions used competency-based standards.

The unit oversaw the implementation of the new classification plan for departmental in-scope employees and acted as advocates for employees throughout the allocation and appeal process.

The department completed its implementation of the new government-wide Intranet Personnel System with minimal disruption to the department.

Plans for 1999-2000

The unit will continue to implement competency based standards and assessments tools in all of its recruitment processes; to expand the decentralization of the Intranet Personnel System to divisions and branches of the department and to commence a process improvement review to ensure the efficiency of branch human resources practices.

Contact:

For further information, contact Lynn Jacobson, Director, Personnel and Administration, at 787-2525.

c) Administration and Financial Services

Administrative and financial services were provided by two units of the Personnel and Administration Branch – Purchasing and Accounts. These units provide: financial management advice, budget preparation, expenditure accounting and reporting and the procurement of goods, mail services, vehicle co-ordination and property management. The operating expenditures were $378,500 for these two units which employ five people. $178,500 was spent on salaries and $200,000 on operating costs.

1998-99 Goals, Activities and Results

Goals

- To provide quality cost-effective administrative services to ensure the department's mandate is achieved within its budget allocation.
- To ensure appropriate financial controls are in place to meet the requirements of the Provincial Comptroller's Office.
- To provide support and assistance in the relocation of the department's head office.

Activities and Results

The department continues to exceed the government's goal of having its suppliers paid on time in 90 per cent of the cases. Post-audit results for the fiscal year 1998-99 indicate that the department had no instances of non-compliance in the payment of invoices.

The budget for 1998-99 was $17,672,000 including special warrants. Actual expenditures were $17,616,627.

In partnership with the program divisions, the branch co-ordinated the design and construction phase for the renovation to the new head office location in Regina. The department will relocate to its new premises in April 1999.

A risk assessment study was conducted to determine the value of department's physical assets. The decision was made to continue with the government policy of self-insurance for physical assets.

Plans for 1999-2000

The unit will oversee the completion of the department's head office relocation; develop and maintain financial administrative systems which meet government's accountability standards; and provide assistance in addressing concerns associated with operating equipment and building maintenance.

Contact:

For further information, contact Lynn Jacobson, Director, Personnel and Administration, at 787-2525.

d) Communications

The Communications Branch provides communications services and advice to the department in communicating with various audiences. The branch focused its efforts in support of the following objectives:

- to increase investment in Saskatchewan's mining, oil and gas sectors; and
- to raise public awareness of the benefits of the resource sectors in Saskatchewan.

The branch also provided a wide range of services including: media inquiries; preparation of communications strategies; department printing requirements; advertising; display production; sales and distribution of technical and promotional publications (including maintenance of subscription and billing data); maintenance of the department reference library; and management of the department Internet web site and the public inquiry line.

Major Activities and Results:

- Assisted the Exploration and Geological Services Division with their participation at the Prospectors and Developers Association trade show in Toronto to attract investment and activity in Saskatchewan's mineral resources. This is the largest mining show in Canada.
- Work continued on expanding the department's web site as an important source of information about Saskatchewan's energy and mineral resources. Use of the site continued to increase during the year. A new site design was introduced in 1998-99.
- Publication sales were valued at $171,570, down from $246,300 in the previous year.
- Responded to 5,232 inquiry calls. This was a decrease from the 6,388 inquiries received in the previous year.
- Assisted other branches with promoting the Geological Open House and the Williston Basin Horizontal Well workshop, both events are aimed at a technical audience and intended to attract activity and investment in Saskatchewan resources.
- Issued 15 news releases, which were distributed through the government's Media Services. Where applicable, the Communications Branch also distributed these releases to specialized oil, gas and mining media.
- Monitored media and provided daily print clipping service to executive management and the Minister's office.

Resources:

Four staff were paid a total of $155,200. Operating cost for the branch was $126,500.

Contact:

For further information, contact Marg Moran McQuinn, Director, Communications, at 787-2567.

e) Indian Land Claims Implementation

The objective of the program is to facilitate the creation of new Indian reserves in Saskatchewan through the implementation of the mineral provisions of Indian land claim settlement agreements. Two types of land claims are dealt with under this program:

- Treaty land entitlement (TLE) claims arising from the implementation of Treaty Land Entitlement Agreements between the province, the federal government and various Indian Bands; and
- Specific land claims arising from the implementation of Specific Claim Settlement Agreements between the federal government and Saskatchewan Indian bands.

The mandate for this program comes from *The Saskatchewan Natural Resources Transfer Agreement (Treaty Land Entitlement) Act, The Treaty Land Entitlement Implementation Act* and *The Crown Minerals Act.*

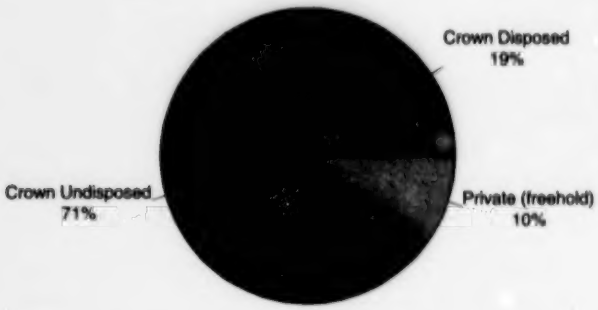
Major Activities:

- The department is currently engaged in the transfer and sale of Crown mineral rights to the federal government on behalf of Indian bands in Saskatchewan. This includes:
  - reviewing and approving all Crown mineral selections;
  - determining the level of compensation that may be required by the province for purposes of transferring Crown mineral rights to the federal government; and
  - preparing Orders in Council approving the transfer of the mineral rights to the federal Crown.
- Other activities include information workshops with the Indian bands and the energy and mineral resource industries, interdepartmental meetings to resolve process and policy issues, and the monitoring the status of Crown mineral rights subject to Indian land claims.

Results:

- In 1998-99, the department reviewed 204,760 hectares of mineral rights requested by Entitlement Bands. Since inception of TLE agreements in 1992, the department has reviewed a total of 1,173,202 hectares of mineral land selections.
- Ninety per cent of the 371,933 hectares of mineral rights currently selected by Entitlement Bands under their TLE Agreements are provincial Crown minerals (Figure 15). Undisposed Crown minerals form the bulk of the mineral land selections (71 per cent). Under the terms of the TLE Agreements, these mineral rights are transferred to the federal government at no cost. Disposed Crown minerals are sold at the present value of future Crown mineral revenues.

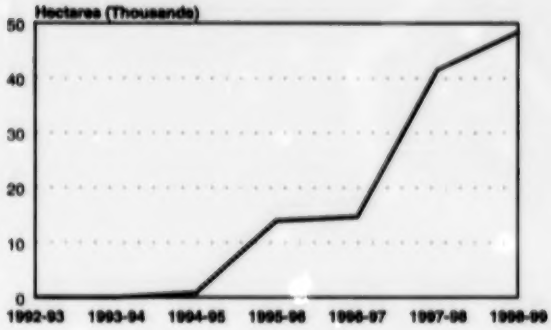
Figure 15 – Mineral Rights Selected by Entitlement Bands



Total area selected by Entitlement Bands = 371,933 hectares (March 1999)

- Fiscal year 1998-99 was the most active year for mineral right transfers (Figure 16). Over 48,374 hectares of provincial Crown mineral rights were approved for transfer to the federal government during this period to become new reserve lands. This brings the total number of hectares of Crown minerals transferred under these agreements to 119,236.

Figure 16 – TLE Implementation Crown Mineral Right Transfers



- During the year, the department concluded the first successful sale and transfer of disposed Crown minerals under a TLE Agreement. The policies, procedures and legal documents developed during this process can now be applied to other disposed mineral transfers.
- 1998-99 also saw considerable activity in the area of specific claim settlements. The first sale of undisposed Crown mineral rights on behalf of a specific claim band was concluded in May, 1998. The department also reviewed a total of 3,499 hectares of mineral rights selected by specific claim bands.

Resources:

Three full-time staff in the Mineral Revenue Branch are dedicated to administering and co-ordinating the land claims process. A number of other staff throughout the department provide input into the process. Salary costs were $112,200 and operating costs were $5,300.

Contact:

For further information, contact Hal Sanders, Director, Mineral Revenue Branch, at 787-2832.

Budget and Actual Expenditures

	1998-99 Budget ($000s)	1998-99 Actual ($000s)	Variances	Notes
Resource Policy and Economics				
Resource Development and Taxation	$ 1,516	$ 1,368	$ (148)	1
Energy Sector Initiatives	138	242	104	2
Subtotal	**$ 1,654**	**$ 1,610**	**$ (44)**	
Exploration and Geological Services	**$ 3,383**	**$ 3,289**	**$ (94)**	3
Petroleum and Natural Gas	**$ 4,040**	**$ 4,238**	**$ 198**	4
Administration				
General Administration	$ 1,355	$ 1,347	$ (8)	5
Computer Services	1,423	1,489	66	6
Subtotal	**$ 2,778**	**$ 2,836**	**$ 58**	
Mineral Revenues				
Mineral Revenue Collection	$ 1,655	$ 1,655	$ –	
Mineral Compensation	321	562	241	7
Subtotal	**$ 1,976**	**$ 2,217**	**$ 241**	
Accommodation and Central Services	**$ 2,256**	**$ 3,427**	**$ 1,171**	8
Total Expenses	**$ 16,087**	**$ 17,617**	**$ 1,530**	
FTE Staff Compliment	**241.4**	**233**	**(8.4)**	

Notes:

1. *Savings due to vacancies.*
2. *Increased operating support for the national consultation process on climate change and other energy sector initiatives.*
3. *Savings due to vacancies.*
4. *Increased salary expensos due to new class plan and economic adjustments.*
5. *Savings in operating expenses.*
6. *Increase due to capital expenditures for equipment.*
7. *One-time alternate compensation arrangement to former owner of mineral rights.*
8. *One-time captial expenses for department's head office relocation.*

Budget and Actual Revenues

	1998-99 Actual	1998-99 Budget	1998-99 Variance	Notes
		($ millions)		
Non-renewable Resource Revenue				
Oil	$304.5	$367.5	$(63.0)	1
Natural Gas	65.9	41.5	24.4	2
Potash	202.5	143.1	59.4	3
Uranium, Coal, Sodium Sulfate and Metals	48.5	58.5	10.0	
Quarrying	0.1	0.1	0.0	
Salt	0.7	0.8	0.1	
Total Non-Renewable	**$622.2**	**$611.5**	**$10.7**	
Other Revenues				
Mineral Rights Tax	$8.2	$8.1	$0.1	
Other Misc. Revenue	1.2	1.3	0.1	
Total Other	**$9.4**	**$9.4**	**0.0**	
Total Revenues	**$631.6**	**$620.9**	**$10.7**	

Major Variance Analysis

1. *The decrease of $63 million in Oil royalties and taxes is due to lower than forecast oil prices, weaker drilling activity and shut-in heavy oil wells.*
2. *The increase of $24.4 million in natural gas royalties and taxes is the result of higher than anticipated prices and a significant increase in drilling and resulting production levels in response to higher natural gas prices.*
3. *The increase of $59.4 million in potash revenues is the result of stronger prices over the fiscal year and the subsequent impact on potash profit tax.*

Major Saskatchewan Resource Industries – Statistical Summary

CRUDE OIL

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997 (est)	1998
Production (million cubic metres)	12.27	11.70	12.25	12.42	13.37	14.97	17.19	18.75	20.94	23.46	23.15
Value of Production ($ millions)	$1,030	$1,242	$1,613	$1,185	$1,407	$1,472	$1,878	$2,293	$3,105	$2,869	$1,933
Direct Employment	4,760	4,160	4,580	4,330	4,630	5,410	5,730	6,070	6,840	7,860	6,240
Capital Spending ($ millions)	$398	$239	$385	$324	$260	$558	$985	$1,045	$1,436.	$2,545	$842
Wells Drilled	1,295	471	821	672	632	1,315	1,421	1,882	2,544	3,608	1,068
Revenues to Provinces*: ($ millions)											
Net Royalty/Tax	$145.2	$196.2	$236.4	$168.1	$227.8	$198.5	$306.4	$346.9	$525.1	$354.4	$233.6
Oil and Gas Land Bonus Bids**	$29.7	$40.2	$27.9	$12.0	$17.1	$84.0	$202.0	$67.6	$140.8	$109.2	$48.7
Other***	$13.0	$17.9	$18.7	$18.1	$17.3	$17.9	$20.2	$32.8	$24.8	$25.1	$22.2
Total	$187.9	$254.3	$283.0	$198.2	$262.2	$300.4	$528.6	$447.3	$690.7	$488.7	$304.5

NATURAL GAS

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997 (est)	1998
Production (million cubic metres)	4,688	6,156	6,939	7,320	7,474	7,667	8,519	8,715	8,066	7,776	7,523
Sales ($ millions)	$210	$281	$340	$357	$323	$358	$490	$347	$340	$396	$417
Net Royalty/Tax ($ millions)*	$36.3	$34.6	$49.6	$42.8	$34.0	$50.3	$61.4	$41.3	$53.0	$44.1	$65.9
Direct Employment	445	520	410	385	305	625	670	395	440	425	550
Capital Spending ($ millions)	$123	$165	$92	$78	$37	$170	$169	$42	$64	$54	$103
Wells Drilled	799	1,009	565	461	211	969	1,000	265	364	327	626

POTASH

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997 (est)	1998
Production (thousand K_2O) tonnes)	7,372	6,509	6,015	6,299	6,179	5,824	7,148	7,925	6,969	8,297	8,646
Sales ($ millions)	$975	$880	$794	$769	$814	$800	$1,107	$1,219	$1,116	$1,505	$1,625
Net Royalty/Tax ($ millions)*	$96.0	$31.3	$49.9	$50.8	$57.1	$51.3	$89.0	$122.3	$87.6	$189.5	$202.5
Direct Employment	3,163	3,157	3,146	3,160	3,030	2,885	2,879	2,958	2,988	2,996	3,141
Capital Spending ($ millions)	$39	$49	$45	$46	$43	$38	$53	$70	$108	$128.7	$160.6

* *All revenue figures, including royalties/taxes are fiscal year statistics.*

** *Land bonus bids are less the Sand Hill credits.*

*** *Other revenues include lease rentals, interest, and net royalty payments, which are fiscal year statistics.*

Major Saskatchewan Resource Industries – Statistical Summary

URANIUM

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Production (million kg)	9.7	8.7	6.8	8.1	9.8	10.0	10.6	11.6	13.3	14.2	N/A
Sales ($ millions)	$463	$380	$344	$304	$381	$375	$408	$432	$651	$557	N/A
Royalty/Tax ($ millions)*	$17.5	$15.5	$19.3	$14.5	$26.4	$31.7	$20.2	$44.7	$57.9	$38.5	N/A
Direct Employment	1,160	1,129	903	1,053	1,052	1,198	1,204	1,458	1,749	1,918	N/A
Capital Spending ($ millions)	$53	$11	$28	$52	$9	$54	$37	$126	$245	$277	N/A

COAL

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Production (million tonnes)	12.1	10.8	9.4	9.0	10.1	10.0	10.7	10.7	10.8	11.6	N/A
Sales ($ millions)	$110	$100	$100	$94	$100	$94	$104	$116	$116	$122	N/A
Royalty/Tax ($ millions)*	$14.9	$13.9	$12.3	$15.8	$13.3	$15.3	$15.6	$15.2	$15.1	$17.4	N/A
Direct Employment	673	601	523	500	559	558	573	537	540	580	N/A
Capital Spending ($ millions)	$44	$48	$7	$9	$11	$23	$8	$5	$6	$9	N/A

PRECIOUS AND BASE METALS

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Gold											
Production (1000 troy ounces)	36.4	87.0	108.9	98.9	86.4	57.1	50.5	94.8	106.9	131.5	N/A
Value of Sales ($ millions)	$20.9	$45.0	$43.7	$33.4	$37.1	$25.8	$25.3	$45.4	$55.8	$67.5	N/A
Capital Spending ($ millions, est)	$14	$11	$6	$22	nil	$4.5	$43	$10	$15	$14	N/A
Silver											
Production (1000 troy ounces)	48.4	26.2	8.0	6.1	7.3	nil	nil	nil	nil	nil	N/A
Value of Sales ($ millions)	$0.4	$0.2	$0.04	$0.03	$0.04	nil	nil	nil	nil	nil	N/A
Base Metals											
Production (million kg)	4.6	2.2	0.5	0.7	0.7	nil	nil	nil	nil	nil	N/A
Value of Sales ($ millions)	$9.0	$4.1	$1.1	$1.3	$0.9	nil	nil	nil	nil	nil	N/
Precious and Base Metals											
Exploration Expenditures ($ millions)	$68	$50	$32	$24	$22	$24	$29	$29	$35	$43	N/A
Revenues ($ millions)*	$1.6	$0.8	$0.8	$1.8	$1.2	$1.3	$1.0	$0.4	$0.7	$1.0	N/A
Direct Employment (Jobs)	337	122	179	158	100	157	188	232	357	660	N/A

OTHER*

includes Potassium Sulphate, Ammonium Sulfate, Bentonite, Quarriable Materials, Coal, Uranium, Gold, Silver & Base Metals

	1996	1997	1998 (est.)
Production (million tonnes)	10,895.0	11,701.9	11,831.4
Sales ($ million)	844.0	757.4	645.8
Revenues ($ million)	73.8	57.0	41.0
Direct Employment (mine site)**	2709	2855	3176
Exploration expenditures***	3542	43.23	30.1

*Significant changes in the number of companies producing minerals in Saskatchewan occurred in 1998. Regulatory requirements related to confidentiality do not permit commodity specific information to be related where there are less than three producing companies. This information is aggregated and presented in the category "other" which includes Potassium Sulphate, Ammonium Sulphate, Bentonite, Quarriable Materials, Coal, Uranium, Gold, Silver and Base Metals.
**Employment figures for 1997 and 1998 employment figures for gold, base metal and uranium mines were from Sask. Post-Secondary Education and Skills Training. Employment information for 1996 and for other mines in 1997 and 1998 continued to be from Sask. Labour. Additionally approximately 300 Saskatchewan residents are employed at the HBMS operations in Flin Flon, Manitoba.
***(Uranium, Precious & Base Metals, Diamonds, Silica Sand, and Rare Earth Minerals).

Major Saskatchewan Resource Industries – Statistical Summary

OTHER MINERALS											(est)
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Sodium and Potassium Sulphate											
Production (thousand tonnes)	272.1	289.2	307.9	274.2	283.9	320.4	321.0	321.7	327.3	292.1	267.8
Value of Sales ($ millions)	$22.4	$23.1	$23.7	$20.1	$22.5	$25.3	$29.1	$29.2	$31.5	$31.8	$29.0
Revenues ($ millions)*	$0.9	$0.8	$0.9	$0.7	$1.1	$1.5	$1.2	$1.4	$1.6	$1.5	$1.2
Direct Employment (mine site)	165	158	166	169	155	144	158	171	176	140	138
Salt											
Production (thousand tonnes)	416.2	411.0	567.9	549.1	578.1	511.9	620.2	701.7	811.2	875.0	750.4
Value of Sales ($ millions)	$20.2	$19.9	$20.2	$20.8	$18.1	$24.3	$20.2	$22.5	$27.8	$29.7	$27.8
Revenues ($ millions)*	$0.2	$0.6	$0.6	$0.6	$0.6	$0.6	$0.6	$0.6	$0.9	$0.8	$0.6
Direct Employment (mine site)	190	218	225	260	224	205	224	224	219	202	138
Bentonite and Other Quarriable Materials											
Bentonite Production (thousand tonnes)	31.9	56.5	7.1	1.0	4.9	10.5	13.9	12.4	15.3	18.9	N/A
Bentonite and Clay Products Value of Sales ($ millions)	$5.5	$7.4	$3.7	$3.9	$3.9	$4.1	$3.5	$3.0	$3.4	$3.5	N/A
Quarriable Materials Revenues ($ millions)*	$0.2	$0.2	$0.2	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1	N/A

MAJOR RESOURCE INDUSTRIES TOTALS											(est)
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Value of Sales/Production ($ millions)	$2,866.4	$2,982.7	$3,283.4	$2,788.5	$3,107.5	$3,178.5	$4,065.1	$4,507.1	$5,446.5	$5,581.5	$4,677.6
Royalties and other Revenues ($ millions)	$355.5	$352.0	$416.6	$325.3	$396.0	$452.5	$717.7	$673.3	$907.6	$781.6	$615.70
Direct Employment (Jobs)	10,893	10,065	10,132	10,015	10,055	11,182	11,626	12,045	13,090	14,781	13,383
Capital Spending ($ millions)	$671	$523	$563	$531	$360	$847.5	$1,295	$1,298	$1,874	$3,027	$1,933

* *All revenue figures, including royalties/taxes are fiscal year statistics.*